

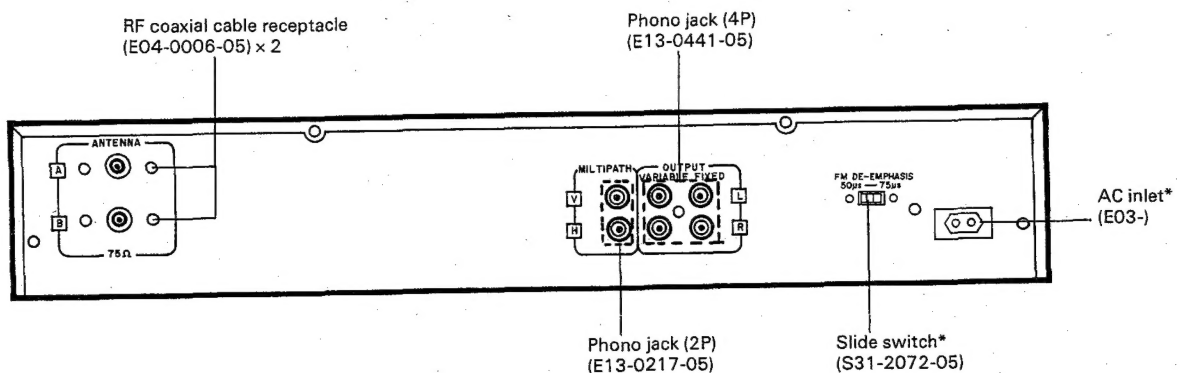
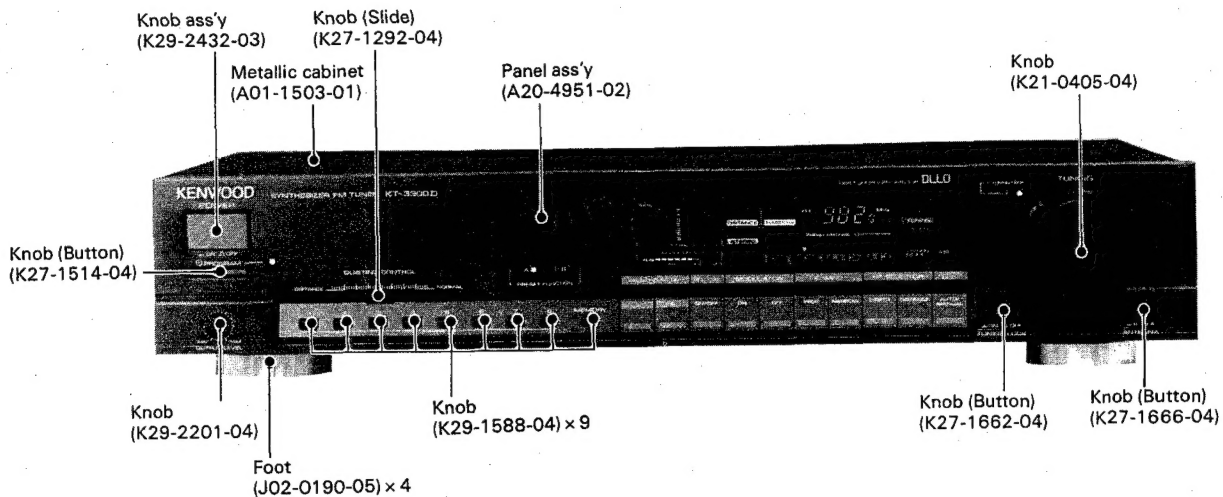
SYNTHESIZER FM TUNER

KT-3300D

SERVICE MANUAL

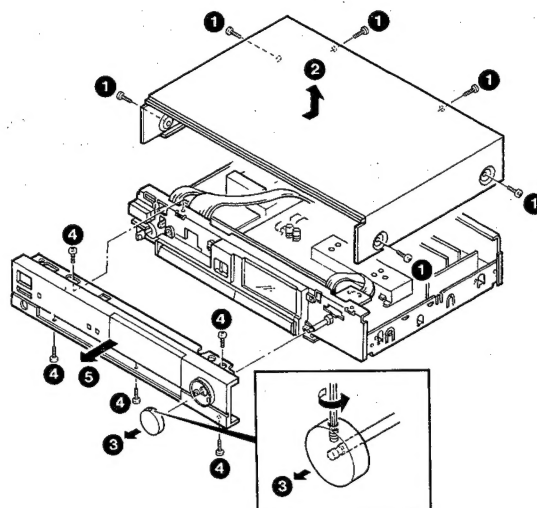
KENWOOD

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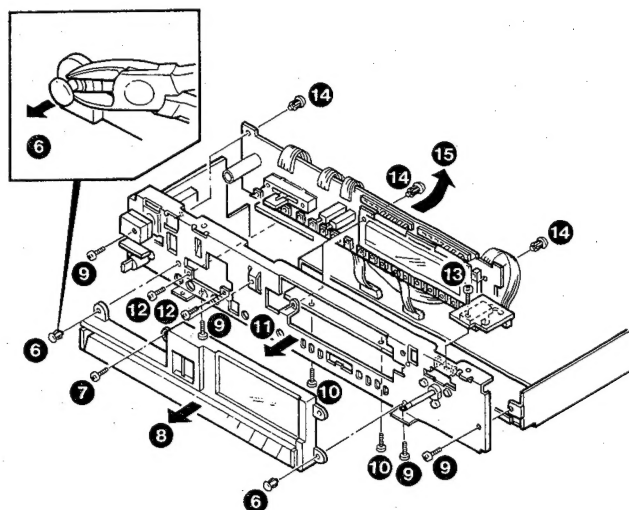


DISASSEMBLY FOR REPAIR

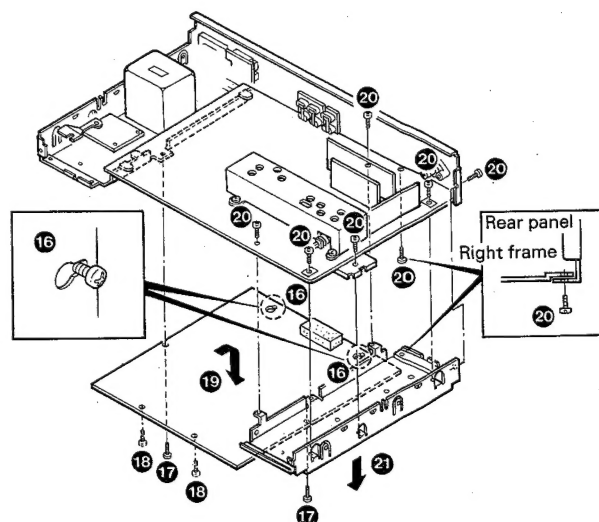
1. Remove the 6 screws on the metallic cabinet ①.
2. Remove the metallic cabinet in the direction of the arrow ②.
3. Loosen halfway the set screw of slotted head on the knob, then remove the knob from the front panel ③.
4. Remove the 5 screws on the front panel ④.
5. Remove the front panel in the direction of the arrow ⑤.



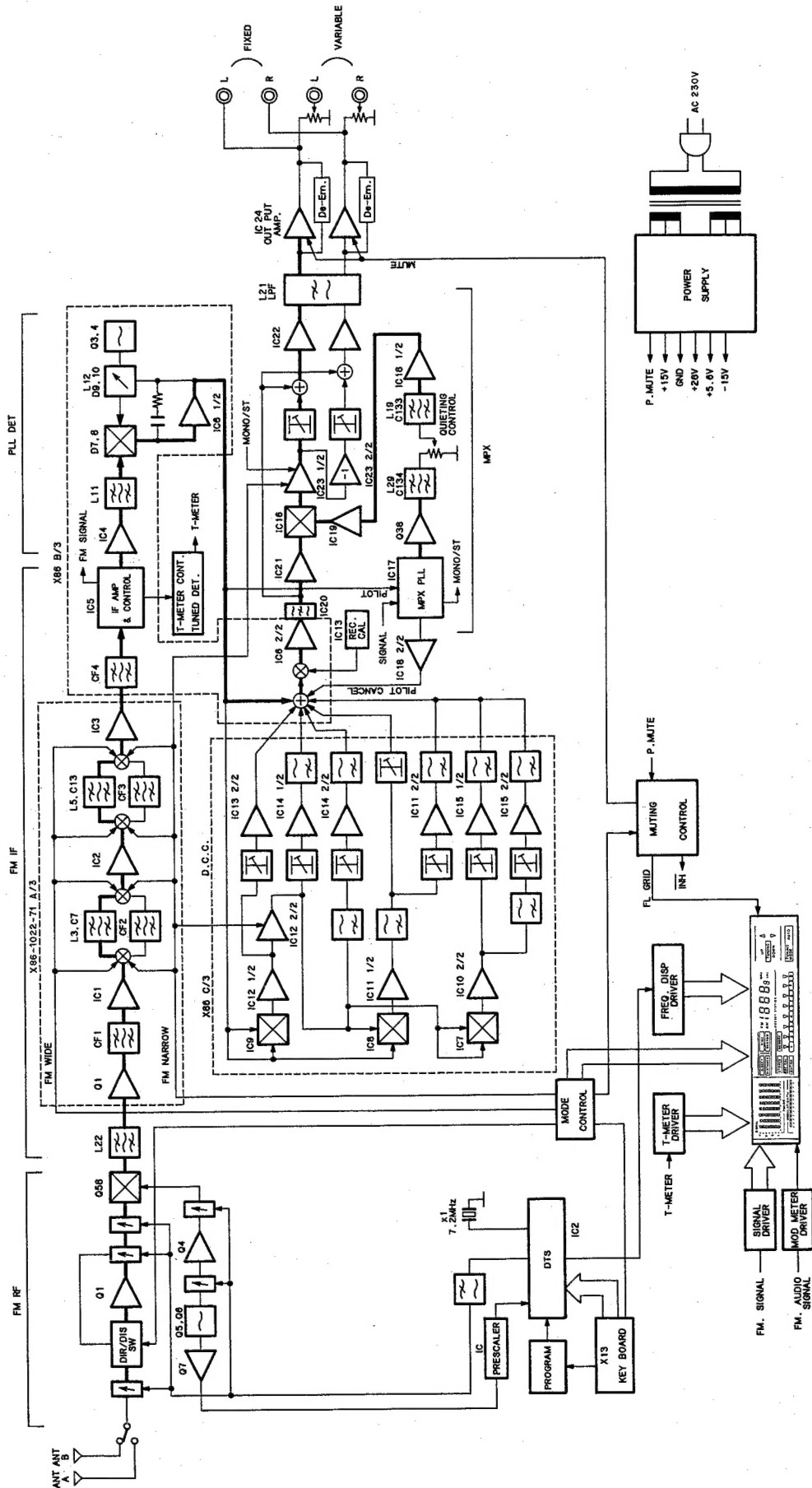
6. Remove 2 push rivets retaining the escutcheon to the sub-panel ⑥.
7. Remove the screw on the escutcheon ⑦.
8. Remove the escutcheon in the direction of the arrow ⑧.
9. Remove the 4 screws on the sub-panel (front side: 2, lower side: 2) ⑨.
10. Remove the 2 screws at the sub-panel on the bottom plate ⑩.
11. Pull out the sub-panel slightly toward the front ⑪.
12. Remove the 2 screws on the Quieting control unit ⑫.
13. Remove the screw on the Sub-unit (X13-5422-71) (D/5), then remove the Sub-unit (X13-) (D/5) ⑬.
14. Remove 3 push rivets retaining the Sub-unit (X13-) (A/5) to the sub-panel ⑭.
15. Remove the Sub-unit (X13-) (A/5) in the direction of the arrow ⑮.



16. Loosen halfway the 2 screws at the rear side on the bottom plate ⑯.
17. Remove the 2 screws at the front side on the bottom plate ⑰.
18. When removing the bottom plate only, also remove the 2 screws on the front side ⑱.
19. Remove the bottom plate ⑲.
20. Remove the 7 screws retaining the right frame (4 on the tuner unit, 2 on the rear panel and 1 screw from the frame at the bottom of the board) ⑳.
21. Pull out the right frame slightly toward the front and remove it ㉑.



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

Function of components

Tuner unit (X05-3162-71)

Components	Use/Function	Operation/Condition/Interchangeability
Q1	1st stage RF amp	The 2nd gate becomes active with High (3.7 V) in DISTANCE mode, and is inoperative with Low (-4 V) in DIRECT mode.
Q4	Tuned buffer	Selectively amplifies the local oscillator output, and supplies it to the mixer.
Q5, 6	Local oscillator	The oscillator circuit is formed of the gate-source capacitance and source-ground capacitance. The frequency is determined by the tank circuit at the gate side.
Q7	Buffer	Amplifies the local oscillator output and sends it to the prescaler.
Q8 ~ 10	PLL low-pass filter	Supplies VT (tuning voltage) by inverting, amplifying and smoothing the phase comparator output from the DTS.
Q11	AND circuit in program circuit	An AND transistor that supplies the clock signal for IC4 (1/2) when Q of IC3 (1/2) is High and \bar{Q} of IC4 (2/2) is Low.
Q12	M8 driver buffer	Converts the impedance of the signal which turns memory address 8 High during program circuit operation.
Q13, 14	Memory A/B switching driver	During program circuit operation or in A/B switching, drive MC1 and MC2 of DTS in conformity with the output from D-FF.
Q15	Power supply for A/B display LED driver transistor	Goes ON in synchronism with the rise of grid +B signal and supplies the B voltage to the A/B display LED driver transistor.
Q16, 17	A/B display LED driver	Similarly to Q13 and Q14, the D-FF output is also supplied to these LED driver transistors, the voltages of which are supplied from Q15 in synchronism with the grid.
Q18	WIDE +B supply	In WIDE mode, supplies +B in conformity with the WIDE/NARROW switching output from RS-FF.
Q19, 20	AUTO/MANUAL driver	Drive the DTS's AUTO/MANUAL terminals in conformity with the AUTO/MANUAL switching output from D-FF (IC6, 1/2).
Q21	REC CAL +B driver	Supplies REC CAL +B in conformity with the REC CAL ON/OFF output from D-FF (IC6, 2/2).
Q22	Muting driver in REC CAL ON/OFF switching	An emitter follower that drives the muting circuit in REC CAL ON/OFF switching operation.
Q23	DIRECT/DISTANCE switching driver	In DISTANCE mode, supplies +B in conformity with the DIRECT/DISTANCE switching output from RS-FF (IC5, 2/2).
Q24	MODULATION display OFF driver	A PNP emitter follower that goes ON when MODULATION is OFF, in conformity with the MOD ON/OFF output from RS-FF (IC7, 2/2).
Q25	Muting driver	When power is turned ON/OFF or when the mode is switched, goes ON to turn the muting signal High.
Q26	+B supply	Amplifies the current output from the power control IC (IC12) and supplies the power to the blocks in the set.
Q27	-B supply	Amplifies the current output from the power control IC (IC12) and supplies the power to the blocks in the set.
Q28	Grid +B supply	Supplies the grid +B voltage (17.5 V). The voltage is controlled by Q29 and the starting by Q30.
Q29	Grid +B control	Controls the grid +B voltage based on the comparison between -B and G.
Q30	Grid +B start control	When power is turned ON, delays the rise of the grid +B voltage for a specified period.
Q31	Low-pass filter +B control	Controls the grid +B voltage based on the comparison between -B and G.
Q32	Low-pass filter +B supply	Supplies the power (30.5 V) for the PLL low-pass filter.
Q33	AC detector	When power is turned OFF, goes ON detecting AC OFF and resets the power ON/OFF control circuit to the initial setup.
Q34	REC CAL control	When REC CAL is ON, goes High to turn Q60 ON and to output the REC CAL signal.
Q35	REC CAL control	When REC CAL is ON, goes Low to start REC CAL oscillator.
Q36	Detuning detector-amplifier	Inverts and amplifies the output of opamp which goes Low when the frequency is detuned, and turns the signal detector circuit OFF.
Q37	38 kHz subcarrier amp	The 38 kHz square wave output from Q38 is input to the emitter and output from the collector. The base is supplied with the S meter output voltage so that the 38 kHz signal level varies in accordance with the variation.
Q38	38 kHz subcarrier transmitter	An emitter follower that transfers the 38 kHz signal output from IC17 (AN7418S) to Q32.
Q39	MONO/STEREO switching	Normally, ON, but goes OFF in case of weak electric field, detuning and in monaural mode.
Q40	Stereo beacon illuminator	In stereo reception mode, goes ON to light the beacon in conformity with the output from the collector of Q39.
Q41	SUB demodulator control	Inverts the Q40 output, controls the gate of Q43 and, in monaural mode, turns the SUB demodulator output to null.

Components	Use/Function	Operation/Condition/Interchangeability
Q42	NARROW operation gain adjustment	In NARROW mode, goes ON to increase the SUB demodulator gain.
Q43	SUB demodulator control	Controls the gate in conformity with the Q41 output and, in monaural mode, turns the SUB demodulator output to null.
Q44	Muting (1)	Because of DC leakage from the relatively large-capacity coupling capacitor (C149) in the composite signal output circuit, a shock noise is sometimes generated when muting is released. To prevent it, this transistor goes ON during muting for quick discharge of C149.
Q45 ~ 48	Muting (2)	Performs muting by killing the output amp gain and short-circuiting the output. The attenuation is approx. -75 dB.
Q49 ~ 51	Current Miller circuit	The SUB demodulated signal current is output antiphase from pins 2 and 14 of IC16 (MC1495L). Q49 and Q50 inverts the phase, Q51 inverts the Q49 output, and the outputs from Q50 and Q51 are composed into a current and converted into voltage by IC23.
Q53	NARROW +B	Amplifies the output from opamp IC15 which goes High in NARROW mode.
Q54	WIDE +B	Inverts and amplifies the IC15 output and outputs a High level signal in WIDE mode.
Q55	MPX PLL power supply	Together with 8 V Zener diode D45, supplies the power voltage to the MPX PLL IC.
Q56	Front-end power supply	Together with 13 V Zener diode D46, supplies the power voltage to the front-end block.
Q57	IF amp	Amplifies the mixer output and drives the IFT.
Q58	Mixer	Mixes and amplifies the antenna input, which has been inserted at L9, and the local oscillator output.
Q59	RF amp	Sends the voltage induced by the 3rd tuning circuit stage to the mixer.
Q60	REC CAL switch	Goes ON when REC CAL is ON to conduct the signal from the oscillator.
IC1	Prescaler	Divides the local oscillator signal and sends it to the DTS.
IC2	DTS	Multifunction LSI IC including PLL phase comparator, frequency memories and band switching function.
IC3, 4	Program function	At the rise of INH signal, switches the memory between the Last channel → Channel 8 (A or B) → Channel 8 (B or A). Manual A/B switching is also available.
IC5	WIDE/NARROW, DIRECT/DISTANCE switching	The R-SFF that switches between WIDE and NARROW and between DIRECT and DISTANCE.
IC6	AUTO/MANUAL, REC CAL ON/OFF switching	The D-FF that switches between AUTO and MANUAL and REC CAL ON and OFF.
IC7	MODULATION ON/OFF and muting relay	IC7 (2/2) (pins 8 to 13) is used to switch the MODULATION display ON/OFF, and (1/2) (pins 1 to 6) is the relay gate for driving muting by differentiating IC5 output.
IC8	Relay phase inverter	IC8 (1/4) is the NOR gate for the REC CAL and IC7 outputs, (2/4) is the DTS MUTE inverter gate, and (4/4) is used to drive the inverter gate of (1/4) and muting transistor Q25.
IC10	Control in power ON/OFF	When power is turned ON, controls the generations of INH signal, grid ON timing signal and muting release signal.
IC11	3-terminal 5 V-line regulator	Supplies the power for the 5 V system.
IC12	Power voltage control	Controls the ± 15 V power system.
IC13	REC CAL OSC	Oscillates the REC CAL signal (400 Hz, equivalent to 50% modulation).
IC14	Auto-stop signal generator	Supplies the auto-stop signal by detecting detuning with IC14 (2/2) and detecting level with (1/2).
IC15	DIRECT/DISTANCE and WIDE/NARROW switching	IC15 (1/2) switches between DIRECT/DISTANCE, and (2/2) switches between WIDE/NARROW.
IC16	SUB demodulator linear multiplier	Pins 4 and 8 accept the 38 kHz subcarrier inputs and pins 9 and 12 accept the composite signal inputs. These signals are linear-multiplies and the current is output at pins 2 and 14. (For details, read the circuit operation description.)
IC17	MPX PLL	Outputs the 38 kHz subcarrier and 19 kHz signals in synchronism with the pilot signal in the DETECTOR OUT signal.
IC19	38 kHz buffer amp	The buffer used for applying the 38 kHz signal to differential input pins 4 and 8 of IC16.
IC20	Buffer & 114 kHz notch filter	The composite signal buffer amplifier and feedback-type notch filter, used for stopping components above 114 kHz \pm alpha.
IC21	Composite signal buffer amp	The buffer amplifier used for supplying the composite signal to differential input pins 9 and 12 of IC16.
IC22	Main/sub adder amp	Adds the SUB demodulator output and composite signal to obtain the L/R signals.
IC23	SUB demodulator current/voltage converter	Converts the current output from IC16 into voltage and inverts its phase.
IC24	Audio output amp	Amplifies the signals which have been separated into L and R by IC22 and filtered by the low-pass filter, and outputs them after providing the required de-emphasis characteristic. Also incorporates the muting function.

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IF/DET daughter unit (X86-1022-71)

Components	Use/Function	Operation/Condition/Interchangeability
Q1	IF amp	
Q3, 4	PLL DET VCO	
Q5	FM signal switch	10.7 MHz.
Q6	Gain control	Switches from REC CAL or (AM), etc.
Q7	DCC ON/OFF switch	Turns ON to raise the gain when in the NARROW mode.
IC1 - 4	IF amp	Receives the auto stop signal and compensates the distortion.
IC5	IF system	
IC6 (1/2)	PLL detector DC amp	IF amp, range mute signal generation, S meter, quadrature detection.
IC6 (2/2)	FM/(AM) signal amp	
IC7	4th distortion generation	Linear multiplier.
IC8	3rd distortion generation	Linear multiplier.
IC9	2nd distortion generation	Linear multiplier.
IC10 (2/2)	4th distortion current-voltage conversion	
IC11 (1/2)	3rd distortion current-voltage conversion	
IC11 (2/2)	Distortion phase compensation amp	3rd distortion in stereo mode.
IC12 (1/2)	2nd distortion current-voltage conversion	
IC12 (2/2)	Distortion phase compensation amp	
IC13 (1/2)	Reference voltage generation	Increase the distortion in NARROW mode.
IC13 (2/2)	DET distortion compensation amp	$V_{CC}/2 = 7.5 \text{ V}$.
IC14 (1/2)	MONO distortion compensation amp	Compensates the distortion in PLL detector.
IC14 (2/2)	STEREO distortion compensation amp	For 2nd distortion compensation.
IC15 (1/2)	MAIN signal distortion compensation amp	For 3rd distortion compensation.
IC15 (2/2)	STEREO signal distortion compensation amp	For 4th distortion compensation.
		For 4th distortion compensation. (10 kHz)

Tuner display unit (X13-5422-71)

Components	Use/Function	Operation/Condition/Interchangeability
Q4, 5	UP/DOWN controller	
Q6	DISTANCE display control	When turned ON/OFF, controls the UP/DOWN operation. (Q4: UP, Q5: DOWN)
Q7	WIDE display control	When turned ON, controls the DISTANCE indicator's OFF.
Q8	AUTO control	When turned ON, controls the WIDE indicator's OFF.
IC1	S-meter driver	AUTO LED flashes.
IC2	T-meter driver	Controls the vertical axis of S (signal strength) meter.
IC3	DIV meter driver	Controls the horizontal axis of T-S (tuning-signal strength) meter.
IC4, 5	FL driver	
IC6	Frequency display driver	Converts the low-voltage circuit (0 - 5 V) to FL drive voltage (0 - 18 V).
IC7	UP/DOWN controller	Status driver for frequency display.
IC8	Dividing, mono-stable	Dividing the pulses to UP and DOWN sides depending on the tuning direction.
IC9 1/2 (1-3)	AUTO control	Divides the tuning pulse and maintains for fixed period.
IC9 2/2 (5-7)	Level shift	AUTO LED flashes.
IC10	DIV meter control	Shifts the center voltage of the tuning meter.
		Controls the hold and reset operation of DIV meter.

Muting Circuit for Switching Operations

When key switches are pushed, the 5 V voltage is latched by IC5 and IC7. However, the flip-flops of IC6 (1/2) and (2/2) are used with AUTO/MANUAL and REC CAL switchings. When the DIRECT/DISTANCE or WIDE/NARROW key is operated in normal operation, for example when the mode is switched to DIRECT, pin 11 of IC5 is maintained at High level. Then, via the differentiation circuit, pin 3 of IC7 goes Low level discharging C92. The low level is maintained for a

specified period so that the muting signal is generated from pin 3 of IC8.

In REC CAL ON/OFF switching, pin 6 of IC8 is fixed at Low level forcibly by D18, so that the muting signal is not generated by DIRECT/DISTANCE and WIDE/NARROW switchings. In addition, the muting signal from the DTS is neither accepted by the operation of R83 and D18.

Auto-Stop Signal Generator Circuit

When no signal input (at no station) (Detune):

Since the range mute signal (LA1231NS; X86-1022-71) is 5V, IC14 ⑦ is -15V. For this, Q36 turns ON and IC14 ② becomes 6.5V. At this time, as the S-meter voltage is less than 1 V, IC14 ① (auto-stop signal output) becomes -15V.

When a weak signal is input (receiving broadcast) (weak signal area: less then approx. 10 dB μ V):

The range mute signal becomes 1V or less and IC14 ⑦ be-

comes +15V. For this, Q36 turns OFF. However, since the S-meter voltage is low, IC14 ① is -15V.

When the broadcast station is received (more than 10 - 14 dB μ V):

Since the range mute signal is 0V, Q36 turns OFF and IC14 ② becomes 1V. And since the S-meter voltage is high (IC14 ③ > 1 V), IC14 ① becomes +15V.

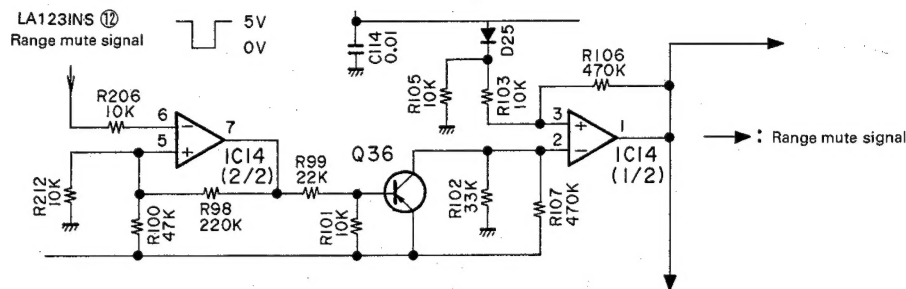


Fig. 4

MPX SUB Decoder (IC16: MC1495L)

The Direct Pure MPX enables stereo decoding without causing beat interference, in theory, by linear-multiplying two analog signals (stereo composite signal and 38 kHz sine wave sub carrier signal).

This unit provides the linear multiplier with high S/N ratio, which is designed with the new theory, so that the high signal-to-noise ratio of 94 dB for the MPX unit itself and the resistance to overmodulation of 400% (dynamic range: 106 dB) are realized while the conventional characteristics are maintained.

In Fig. 5, the composite signal is applied to the differential inputs "X input" (pins 9, 12) and the 38 kHz subcarrier signal is applied to the differential inputs "Y input" (pins 4, 8).

The Y-input differential amp has special non-linear load as shown in the symbol of diode in the diagram. When the sig-

nal generated here is used to drive the double-balanced differential amp of Q5 to Q8, switching is not performed but the linear multiplication with the composite signal applied to the X-input pins is executed.

In Fig. 6, the opamp shown by IC19 and IC21 is used for the backup in the voltage/current conversion at the Darlington differential amp in IC16. The opamp can include the Darlington differential transistor in the loop, eliminating distortion due to changes in parameters. The signal output from the differential open-collector design is composed into current by the dual-transistor, high-accuracy current Miller circuit of Q49, Q50 and Q51, and the current obtained is converted into a voltage signal by the current/voltage converter opamp.

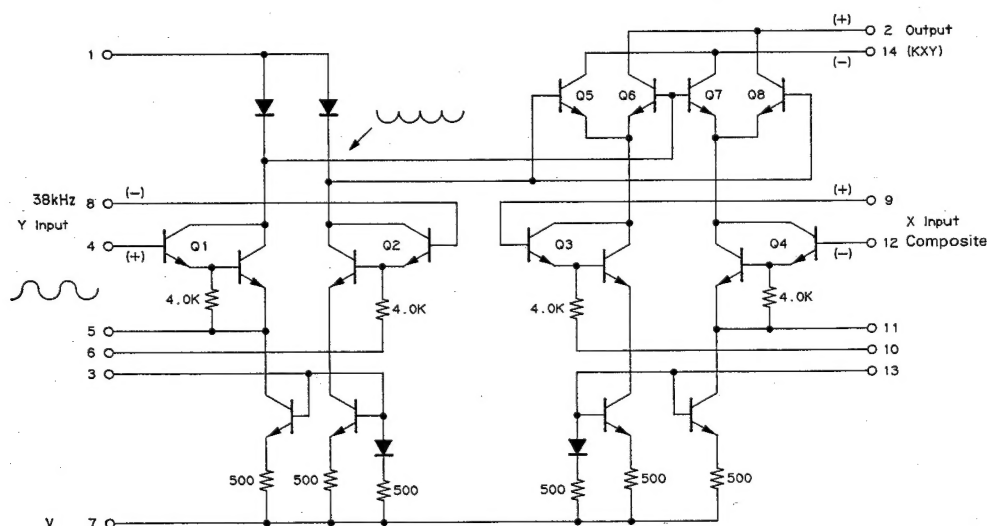


Fig. 5 MC1495L Internal equivalent circuit

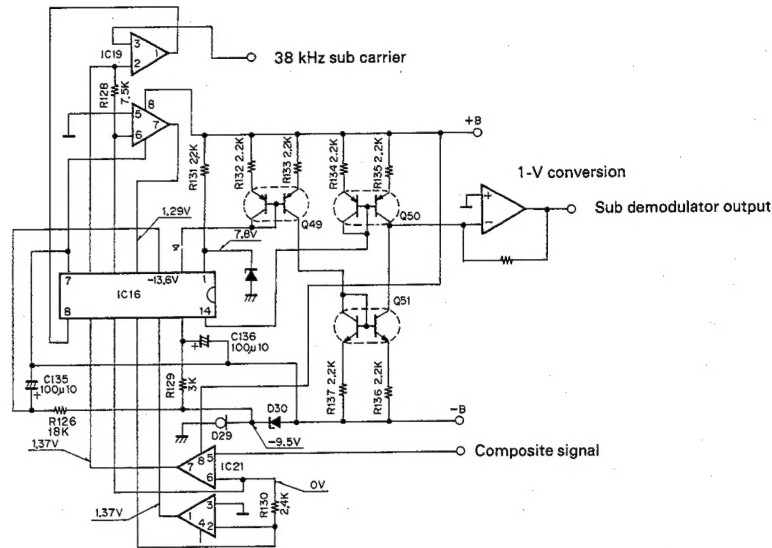


Fig. 6 Actual circuit

Program Circuit

Similarly to the program circuit used with the KT-1010F and KT-880F, the program circuit of this model has the following function cycles; 1) Last channel; 2) M8 of A or B (same side as the Last channel); 3) M8 of B or A; 4) repetition of 2 and 3; However, the circuit design is more simplified by using four D-FFs.

When the PROGRAM OFF signal is being applied, three

D-FFs are reset so only the switching between A and B is available.

When the PROGRAM OFF signal is Low, the voltages at different points vary as shown below, in conformity with the INH signal which is generated in synchronism with power ON/OFF.

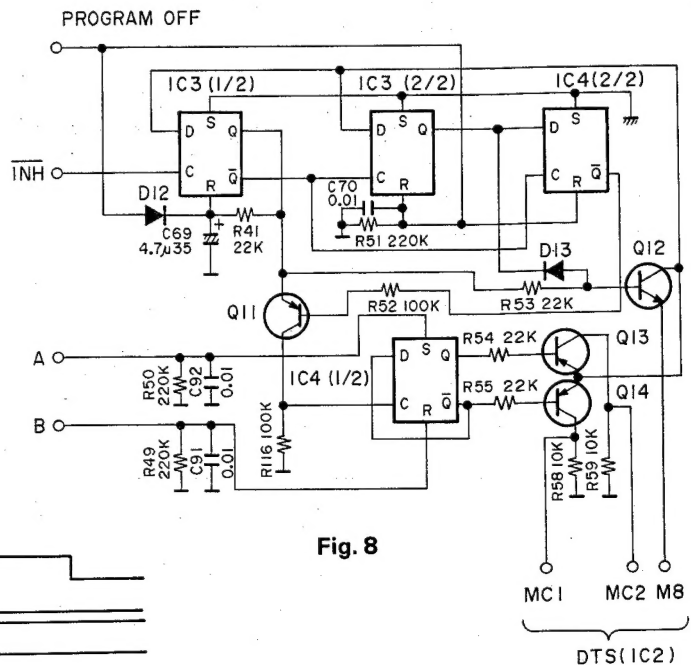


Fig. 8

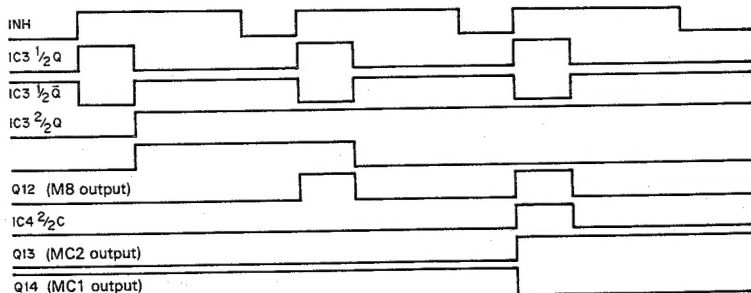


Fig. 7 Timing chart

KT-3300D

Non-Stable Multi-Vibrator for Peak Hold and Reset

Since the BA668A deviation meter drive IC provides the peak-hold function as well as the reset pin, when random pulses are applied, a simple peak hold meter will be constructed.

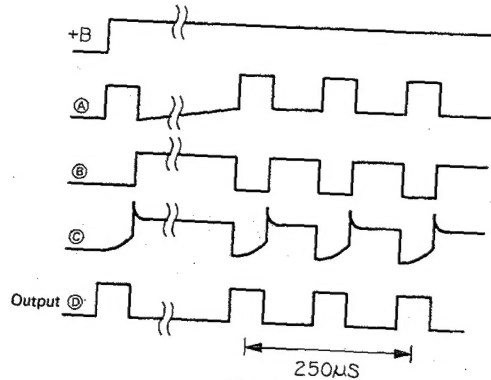


Fig. 9

While two inputs of the first NOR gate are short-circuited, one end of the second NOR gate is grounded. This is because the threshold values of two gates are set differently to

structured. For this purpose, this circuit is used as the multi-vibrator consisting of two NOR gates (C-MOS) and oscillates by the mechanism as follows:

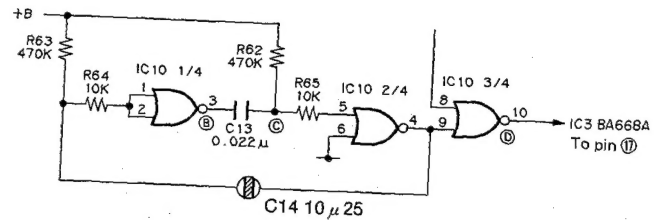


Fig. 10 IC10: μ PD4001BC

prevent the circuit from entering non-oscillation/stable state at the power ON/OFF timing.

Digital Rotary Tuning

The basic configuration is that the transparent slits (30 slits) on the rotating disk attached to the tuning knob pass through PH1 as shown, whereby the rotary direction is identified, until the required reception frequency is obtained (Fig. 14). PH1 is a photo-interrupter incorporating LED (light-emitting diode), phototransistor and logic circuits.

The phototransistors are arranged in a pair.

1. The signal which identifies the rotary direction is output from pin 4.

Clockwise rotation (tuning to high frequency band): high level.

Counterclockwise rotation (tuning to low frequency band): low level.

2. The tuning speed is determined by the number of pulses to be output from pin 5 which are proportional to the number of slits.

So that by using these two signals (a and b) the UP and DOWN pulses are obtained, logic circuits IC7 and IC8 are added.

IC7 distributes pulses for UP or DOWN directions. IC8 prevents malfunction and serves as a frequency divider and monostable multivibrator.

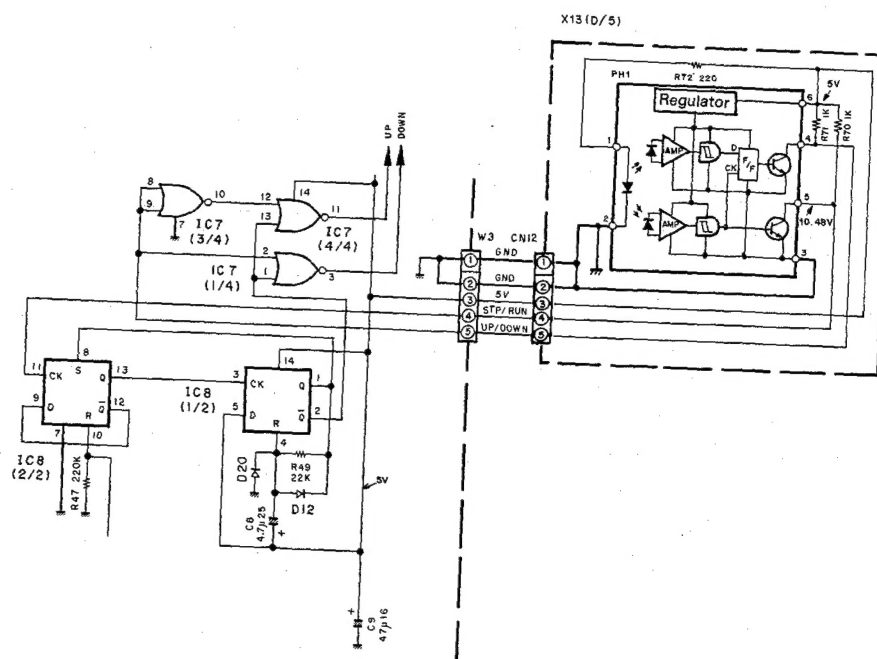


Fig. 11 Digital rotary tuning circuit

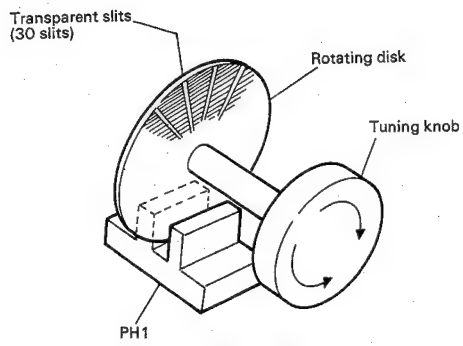


Fig. 14

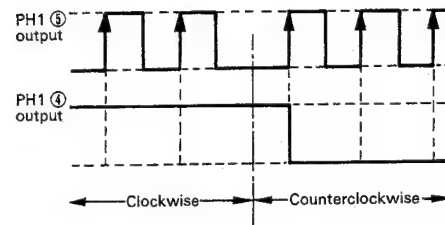


Fig. 12 Operation timing chart of PH1

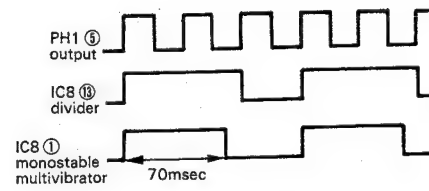


Fig. 13 Timing chart

ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
SECTION Unless otherwise specified, the individual switches should be set as following: IF BAND:WIDE RF SELECTOR:DISTANCE MODURATION:ON TUNING MODE:AUTO REC CAL:OFF TUNING LOCK:OFF PROGRAM:OFF ANTENNA:A OUTPUT LEVEL:MAX QUIETING CONTROL:NORMAL							
1	BAND EDGE (1)	—	Connect a DC voltmeter between TP6 and TP7.	TUNING MODE: MANU 87.5MHz	L5 (X05-)	3.0V±0.1V	(a)
2	BAND EDGE (2)	—	Connect a DC voltmeter between TP6 and TP7.	TUNING MODE: MANU 108.0MHz	TC5 (X05-)	25.0V±0.3V	(a)
Repeat alignments 1 and 2 several times.							
3	DISCRIMINATOR (1)	(A) 98.0MHz 0 dev 100dBμ (ANT input)	Connect a DC voltmeter between TP10 and TP11.	98.0MHz	L12 (X86-)	0.000V±10mV	(b)
4	DISCRIMINATOR (2)	(A) 98.0MHz 0 dev 100dBμ (ANT input)	Connect a DC voltmeter between TP16 and TP17.	98.0MHz	L9 (X86-)	0.000V±10mV	(c)
5	RF ALIGNMENT (1)	(A) 90.0MHz 1kHz, ±75kHz dev	(B)	90.0MHz	L1~4 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
6	RF ALIGNMENT (2)	(A) 106.0MHz 1kHz, ±75kHz dev	(B)	106.0MHz	TC1~5 (X05-)	Maximum amplitude and symmetry of the oscilloscope display.	
Repeat alignments 5 and 6 several times.							
7	IFT	(A) 98.0MHz 1kHz, ±75kHz dev 2~3dBμ (ANT input)	(B)	98.0MHz	L10,11,22 (X05-) L11(X86-)	Maximum amplitude and symmetry of the oscilloscope display.	
8	AUTO-STOP SENSITIVITY	(A) 98.0MHz Pilot:±6.75kHz dev 12dBμ (ANT input)	—	98.0MHz	VR1 (X86-)	The STEREO indicator lights.	
9	SIGNAL METER DISPLAY	(A) 98.0MHz 0 dev 43dBμ (ANT input)	—	98.0MHz	VR3 (X13-)	Lighting of the 7th dot.	(f)
10	TUNING METER DISPLAY	(A) 98.0MHz Selector: MONO 10Hz, ±100~150kHz dev 80dBμ (ANT input)	—	98.0MHz	VR2 (X13-)	Operate so that the red colors at the extremities of the center light uniformly.	
11	MPX VCO	(C) 98.0MHz 0 dev 80dBμ (ANT input)	Connect a frequency counter to TP15 via an AC voltmeter.	98.0MHz	VR5 (X05-)	76.000kHz±50Hz	(d)
12	PILOT CANCELLER (1)	(C) 98.0MHz 0 dev Pilot:±6.75kHz dev 80dBμ (ANT input)	Connect a AC voltmeter between TP9 and GND	98.0MHz	VR1 (X05-)	Minimum 19kHz output.	(e)
13	PILOT CANCELLER (2)	(C) 98.0MHz 0 dev Pilot:±6.75kHz dev 80dBμ (ANT input)	Connect a AC voltmeter between TP9 and GND	98.0MHz	L20 (X05-)	Minimum 19kHz output.	(e)
Repeat alignments 12 and 13 several times.							
14	SUB CARRIER (38kHz)	(C) 98.0MHz Selector: SUB 100Hz, ±68.25kHz dev Pilot:±6.75kHz dev 80dBμ (ANT input)	(B)	98.0MHz	L19 (X05-)	Minimum distortion.	
15	DISTORTION(1) DLD	(C) 98.0MHz Selector: MONO 1kHz, ±75kHz dev 80dBμ (ANT input)	(B)	98.0MHz	VR3 (X86-)	Minimum distortion.	
16	DISTORTION(2) MONO	(C) 98.0MHz Selector: MONO 1kHz, ±75kHz dev 80dBμ (ANT input)	(B)	98.0MHz	VR4 (X86-)	Minimum distortion.	

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	TUNER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
17	DISTORTION(3) MONO	(C) 98.0MHz Selector: MONO 1kHz, ± 75 kHz dev 80dB μ (ANT input)	(B)	98.0MHz	VR6 (X86-)	Minimum distortion.	
18	DISTORTION(4) STEREO	(C) 98.0MHz Selector: L 1kHz, ± 68.25 kHz dev Pilot: ± 6.75 kHz dev 80dB μ (ANT input)	(B)	98.0MHz	VR5 (X86-)	Minimum distortion.	
19	DISTORTION(5) STEREO	(C) 98.0MHz Selector: SUB 1kHz, ± 68.25 kHz dev Pilot: ± 6.75 kHz dev 80dB μ (ANT input)	(B)	98.0MHz	VR7 (X86-)	Minimum distortion.	
Repeat alignments 16~19 several times.							
20	DISTORTION(6)	(C) 98.0MHz Selector: MAIN 10kHz, ± 68.25 kHz dev Pilot: ± 6.75 kHz dev 80dB μ (ANT input)	(B)	98.0MHz	VR8 (X86-)	Minimum distortion.	
21	DISTORTION(7)	(C) 98.0MHz Selector: L 10kHz, ± 68.25 kHz dev Pilot: ± 6.75 kHz dev 80dB μ (ANT input)	(B)	98.0MHz	VR9 (X86-)	Minimum distortion.	
22	DISTORTION(8) NARROW	(C) 98.0MHz Selector: L 1kHz, ± 68.25 kHz dev Pilot: ± 6.75 kHz dev 80dB μ (ANT input)	(B)	98.0MHz	VR2 (X86-)	Minimum distortion.	
23	SEPARATION(1) L	(C) 98.0MHz Selector: R 1kHz, ± 68.25 kHz dev Pilot: ± 6.75 kHz dev 80dB μ (ANT input)	(B) L	98.0MHz	VR4 (X05-)	Minimum crosstalk.	
24	SEPARATION(2) R	(C) 98.0MHz Selector: L 1kHz, ± 68.25 kHz dev Pilot: ± 6.75 kHz dev 80dB μ (ANT input)	(B) R	98.0MHz	VR3 (X05-)	Minimum crosstalk.	
25	SEPARATION(3) NARROW	(C) 98.0MHz Selector: R 1kHz, ± 68.25 kHz dev Pilot: ± 6.75 kHz dev 80dB μ (ANT input)	(B) L	98.0MHz	VR2 (X05-)	Minimum crosstalk.	
26	DEVIATION DISPLAY	—	—	REC CAL:ON	VR4 (X13-)	Position where the 4th dot lights.	(g)

REGLAGE

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU TUNER	POINT DE L'ALIGNEMENT	ALIGNER POUR	FIG
SECTION MF Sauf en cas d'indications spéciales, régler chaque commutateur comme suit: IF BAND:WIDE RF SELECTOR:DISTANCE MODURATION:ON TUNING MODE:AUTO REC CAL:OFF TUNING LOCK:OFF PROGRAM:OFF ANTENNA:A OUTPUT LEVEL:MAX QUIETING CONTROL:NORMAL							
1	BORD DE BANDE (1)	—	Connecter un voltmètre CC entre les TP6 et 7.	TUNING MODE: MANU 87.5MHz	L5 (X05-)	3.0V±0.1V	(a)
2	BORD DE BANDE (2)	—	Connecter un voltmètre CC entre les TP6 et 7.	TUNING MODE: MANU 108MHz	TC5 (X05-)	25.0V±0.3V	(a)
Répéter les points 1 et 2 plusieurs fois.							
3	DISCRIMINATEUR (1)	(A) 98.0MHz 0dév 100dBμ (Entrée ANT)	Connecter un voltmètre CC entre les TP10 et 11.	98.0MHz	L12 (X86-)	0.000V±10mV	(b)
4	DISCRIMINATEUR (2)	(A) 98.0MHz 0dév 100dBμ (Entrée ANT)	Connecter un voltmètre CC entre les TP16 et 17.	98.0MHz	L9 (X86-)	0.000V±10mV	(c)
5	ALIGNEMENT HT (1)	(A) 90.0MHz 1kHz, ±75kHz dév	(B)	90.0MHz	L1~4 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
6	ALIGNEMENT HT (2)	(A) 106.0MHz 1kHz, ±75kHz dév	(B)	106.0MHz	TC1~5 (X05-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
Répéter les points 5 et 6 plusieurs fois.							
7	TRANSFORMATEUR FI	(A) 98.0MHz 1kHz, ±75kHz dév 2~3dBμ (Entrée ANT)	(B)	98.0MHz	L10,11,22 (X05-) L11(X86-)	Amplitude et symétrie maximale de l'affichage de l'oscilloscope.	
8	SENSIBILITE ARRET AUTOMATIQUE	(A) 98.0MHz Pilote: ±6.75kHz dév 12dBμ (Entrée ANT)	—	98.0MHz	VR1 (X86-)	L'indicateur de stéréo s'allume.	
9	COMPTEUR DE SIGNAL	(A) 98.0MHz 0dév 43dBμ (Entrée ANT)	—	98.0MHz	VR3 (X13-)	Illumination du 7ème point.	(f)
10	COMPTEUR D'ACCORD	(A) 98.0MHz Sélection: MONO 10Hz, ±100~150kHz dév 80dBμ (Entrée ANT)	—	98.0MHz	VR2 (X13-)	Faire fonctionner de manière à ce que la couleur rouge aux extrémités du centre s'allume uniformément.	
11	MPX VCO	(C) 98.0MHz 0dév 80dBμ (Entrée ANT)	Connecter un compteur de fréquence à TP15 par l'intermédiaire d'un voltmètre CA.	98.0MHz	VR5 (X05-)	76.000kHz±50Hz	(d)
12	CIRCUIT SUPPRESSION DE SIGNAL PILOTE (1)	(C) 98.0MHz 0dév Pilote: ±6.75kHz dév 80dBμ (Entrée ANT)	Connecter un voltmètre CA entre les TP9 et GND.	98.0MHz	VR1 (X05-)	19kHz sortie minimale.	(e)
13	CIRCUIT SUPPRESSION DE SIGNAL PILOTE (2)	(C) 98.0MHz 0dév Pilote: ±6.75kHz dév 80dBμ (Entrée ANT)	Connecter un voltmètre CA entre les TP9 et GND.	98.0MHz	L20 (X05-)	19kHz sortie minimale.	(e)
Répéter les points 12 et 13 plusieurs fois.							
14	SOUS-PORTEUSE (38kHz)	(C) 98.0MHz Sélection: SUB 100Hz, ±68.25kHz dév Pilote: ±6.75kHz dév 80dBμ (Entrée ANT)	(B)	98.0MHz	L19 (X05-)	Distorsion minimale.	
15	DISTORSION(1) DLLD	(C) 98.0MHz Sélection: MONO 1kHz, ±75kHz dév 80dBμ (Entrée ANT)	(B)	98.0MHz	VR3 (X86-)	Distorsion minimale.	
16	DISTORSION(2) MONO	(C) 98.0MHz Sélection: MONO 1kHz, ±75kHz dév 80dBμ (Entrée ANT)	(B)	98.0MHz	VR4 (X86-)	Distorsion minimale.	

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE LA SORTIE	REGLAGE DU TUNER	POINT DE L'ALIGNEMENT	ALIGNER POUR	FIG
17	DISTORSION(3) MONO	(C) 98,0MHz Sélection: MONO 1kHz, ±75kHz dév 80dB μ (Entrée ANT)	(B)	98,0MHz	VR6 (X86-)	Distorsion minimale.	
18	DISTORSION(4) STEREO	(C) 98,0MHz Sélection: G 1kHz, ±68,25kHz dév Pilote: ±6,75kHz dév 80dB μ (Entrée ANT)	(B)	98,0MHz	VR5 (X86-)	Distorsion minimale.	
19	DISTORSION(5) STEREO	(C) 98,0MHz Sélection: SUB 1kHz, ±68,25kHz dév Pilote: ±6,75kHz dév 80dB μ (Entrée ANT)	(B)	98,0MHz	VR7 (X86-)	Distorsion minimale.	
Répéter les alignements 16~19 plusieurs fois.							
20	DISTORSION(6)	(C) 98,0MHz Sélection: Principal 10kHz, ±68,25kHz dév 80dB μ (Entrée ANT)	(B)	98,0MHz	VR8 (X86-)	Distorsion minimale.	
21	DISTORSION(7)	(C) 98,0MHz Sélection: G 10kHz, ±68,25kHz dév Pilote: ±6,75kHz dév 80dB μ (Entrée ANT)	(B)	98,0MHz	VR9 (X86-)	Distorsion minimale.	
22	DISTORSION(8) NARROW	(C) 98,0MHz Sélection: G 1kHz, ±68,25kHz dév Pilote: ±6,75kHz dév 80dB μ (Entrée ANT)	(B)	98,0MHz	VR2 (X86-)	Distorsion minimale.	
23	SEPARATION(1) G	(C) 98,0MHz Sélection: D 1kHz, ±68,25kHz dév Pilote: ±6,75kHz dév 80dB μ (Entrée ANT)	(B) G	98,0MHz	VR4 (X05-)	Diaphonie minimale.	
24	SEPARATION(2) D	(C) 98,0MHz Sélection: G 1kHz, ±68,25kHz dév Pilote: ±6,75kHz dév 80dB μ (Entrée ANT)	(B) D	98,0MHz	VR3 (X05-)	Diaphonie minimale.	
25	SEPARATION(3) NARROW	(C) 98,0MHz Sélection: D 1kHz, 68,25kHz dév Pilote: ±6,75kHz dév 80dB μ (Entrée ANT)	(B) G	98,0MHz	VR2 (X05-)	Diaphonie minimale.	
26	DEVIATION	—	—	REC CAL: ON	VR4 (X13-)	Position où le 4eme point s'allume.	(g)

ABGLEICH

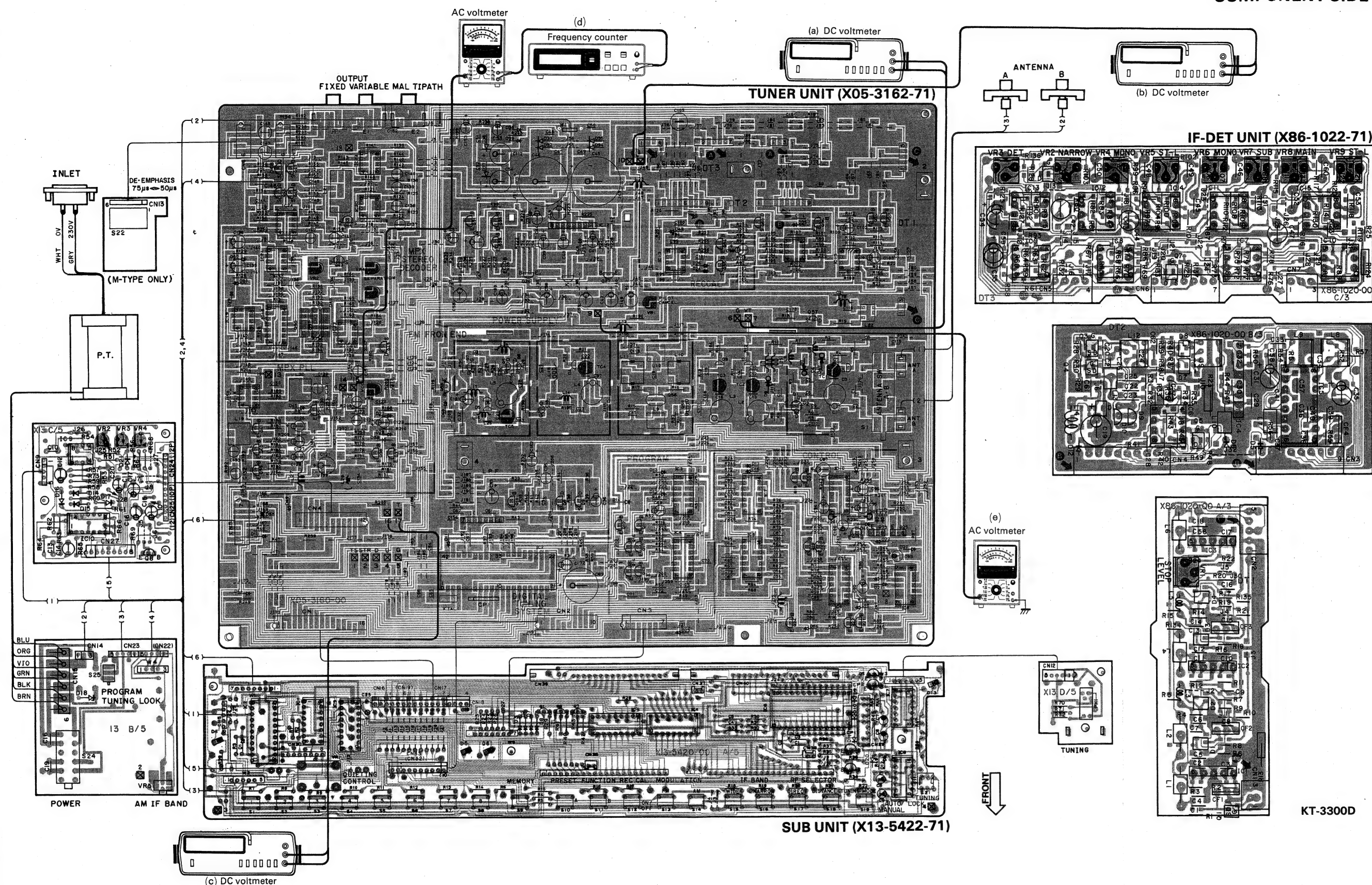
NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
UKW-EMPFAANGSABTEILUNG IF BAND:WIDE RF SELECTOR:DISTANCE MODURATION:ON TUNING MODE:AUTO REC CAL:OFF TUNING LOCK:OFF PROGRAM:OFF ANTENNA:A OUTPUT LEVEL:MAX QUIETING CONTROL:NORMAL							
1	BANDKANTE (1)	—	Einen Gleichspannungsmesser zwischen TP6 und TP7 anschließen.	TUNING MODE: MANU 87,5MHz	L5 (X05-)	3,0V±0,1V	(a)
2	BANDKANTE (2)	—	Einen Gleichspannungsmesser zwischen TP6 und TP7 anschließen.	TUNING MODE: MANU 108,0MHz	TC5 (X05-)	25,0V±0,3V	(a)
Abstimmungen 1 und 2 mehrere Male wiederholen.							
3	DISKRIMINATOR (1)	(A) 98,0MHz 0 Hub 100dBµ (ANT-Eingang)	Einen Gleichspannungsmesser zwischen TP10 und TP11 anschließen.	98,0MHz	L12 (X86-)	0,000V±10mV	(b)
4	DISKRIMINATOR (2)	(A) 98,0MHz 0 Hub 100dBµ (ANT-Eingang)	Einen Gleichspannungsmesser zwischen TP16 und TP17 anschließen.	98,0MHz	L9 (X86-)	0,000V±10mV	(c)
5	HF-ABGLEICH (1)	(A) 90,0MHz 1kHz, ±75kHz Hub	(B)	90,0MHz	L1~4 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
6	HF-ABGLEICH (2)	(A) 106,0MHz 1kHz, ±75kHz Hub	(B)	106,0MHz	TC1~5 (X05-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
Abstimmungen 5 und 6 mehrere Male wiederholen.							
7	ZF-ÜBERTRAGER	(A) 98,0MHz 1kHz, ±75kHz Hub 2~3dBµ (ANT-Eingang)	(B)	98,0MHz	L10,11,22 (X05-) L11(X86-)	Maximal Amplitude und Symmetrie des Oszilloskopbildes.	
8	AUTOSTOP-EMPFINDLICHKEIT	(A) 98,0MHz Piloten: ±6,75 Hub 12dBµ (ANT-Eingang)	—	98,0MHz	VR1 (X86-)	Die Stereoanzeige leuchtet.	
9	SIGNALMESSER	(A) 98,0MHz 0 Hub 43dBµ (ANT-Eingang)	—	98,0MHz	VR3 (X13-)	Der 7. Punkt leuchtet.	(f)
10	ABSTIMMSIGNALMESSER	(A) 98,0MHz Wähler: MONO 10Hz, ±100~150kHz Hub 80dBµ (ANT-Eingang)	—	98,0MHz	VR2 (X13-)	So bedienen, daß die roten Farben an den Seiten der Mitte gleichmäßig leuchten.	
11	MPX VCO	(C) 98,0MHz 0 Hub 80dBµ (ANT-Eingang)	Einen Frequenzmesser an TP15 über einen Wechselspannungsmesser anschließen.	98,0MHz	VR5 (X05-)	76,000kHz±50Hz	(d)
12	PILOT-LÖSCHER (1)	(C) 98,0MHz 0 Hub Piloten: ±6,75kHz Hub 80dBµ (ANT-Eingang)	Einen Wechselspannungsmesser zwischen TP9 und GND anschließen.	98,0MHz	VR1 (X05-)	19kHz Minimaler Ausgang.	(e)
13	PILOT-LÖSCHER (2)	(C) 98,0MHz 0 Hub Piloten: ±6,75kHz Hub 80dBµ (ANT-Eingang)	Einen Wechselspannungsmesser zwischen TP9 und GND anschließen.	98,0MHz	L20 (X05-)	19kHz Minimaler Ausgang.	(e)
Abstimmungen 12 und 13 mehrere Male wiederholen.							
14	HILFSTRÄGER (38kHz)	(C) 98,0MHz Wähler: SUB 100Hz, ±68,25kHz Hub Piloten: ±6,75kHz Hub 80dBµ (ANT-Eingang)	(B)	98,0MHz	L19 (X05-)	Minimal Klirrfaktor.	
15	KLIRRFaktor(1) DLLD	(C) 98,0MHz Wähler: MONO 1kHz, ±40,0kHz Hub 80dBµ (ANT-Eingang)	(B)	98,0MHz	VR3 (X86-)	Minimal Klirrfaktor.	
16	KLIRRFaktor(2) MONO	(C) 98,0MHz Wähler: MONO 1kHz, ±40,0kHz Hub 80dBµ (ANT-Eingang)	(B)	98,0MHz	VR4 (X86-)	Minimal Klirrfaktor.	

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	TUNER-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
17	KLIRRFAKTOR(3) MONO	(C) 98,0MHz Wähler: MONO 1kHz, ±40,0kHz Hub 80dB μ (ANT-Eingang)	(B)	98,0MHz	VR6 (X86-)	Minimal Klirrfaktor.	
18	KLIRRFAKTOR(4) STEREO	(C) 98,0MHz Wähler: L 1kHz, ±40,0kHz Hub Pilotten: ±6,00kHz Hub 80dB μ (ANT-Eingang)	(B)	98,0MHz	VR5 (X86-)	Minimal Klirrfaktor.	
19	KLIRRFAKTOR(5) STEREO	(C) 98,0MHz Wähler: SUB 1kHz, ±40,0kHz Hub Pilotten: ±6,00kHz Hub 80dB μ (ANT-Eingang)	(B)	98,0MHz	VR7 (X86-)	Minimal Klirrfaktor.	
Abstimmungen 16~19 mehrere Male wiederholen.							
20	KLIRRFAKTOR(6)	(C) 98,0MHz Wähler: Haupt 10kHz, ±40,0kHz Hub Pilotten: ±6,00kHz Hub 80dB μ (ANT-Eingang)	(B)	98,0MHz	VR8 (X86-)	Minimal Klirrfaktor.	
21	KLIRRFAKTOR(7)	(C) 98,0MHz Wähler: L 10kHz, ±40,0kHz Hub Pilotten: ±6,00kHz Hub 80dB μ (ANT-Eingang)	(B)	98,0MHz	VR9 (X86-)	Minimal Klirrfaktor.	
22	KLIRRFAKTOR(8) NARROW	(C) 98,0MHz Wähler: L 1kHz, ±40,0kHz Hub Pilotten: ±6,00kHz Hub 80dB μ (ANT-Eingang)	(B)	98,0MHz	VR2 (X86-)	Minimal Klirrfaktor.	
23	STEREO KANAL TRENNUNG(1) L	(C) 98,0MHz Wähler: R 1kHz, ±40,0kHz Hub Pilotten: ±6,00kHz Hub 80dB μ (ANT-Eingang)	(B) L	98,0MHz	VR4 (X05-)	Minimales Übersprechen.	
24	STEREO KANAL TRENNUNG(2) R	(C) 98,0MHz Wähler: L 1kHz, ±40,0kHz Hub Pilotten: ±6,00kHz HUB 80dB μ (ANT-Eingang)	(B) R	98,0MHz	VR3 (X05-)	Minimales Übersprechen.	
25	STEREO KANAL TRENNUNG(3) NARROW	(C) 98,0MHz Wähler: R 1kHz, ±40,0kHz Hub Pilotten: ±6,00kHz Hub 80dB μ (ANT-Eingang)	(B) L	98,0MHz	VR2 (X05-)	Minimales Übersprechen.	
26	HUBVERHÄLTNIS	—	—	REC CAL:ON	VR4 (X13-)	So positionieren, daß der 4. Punkt leuchtet.	(g)



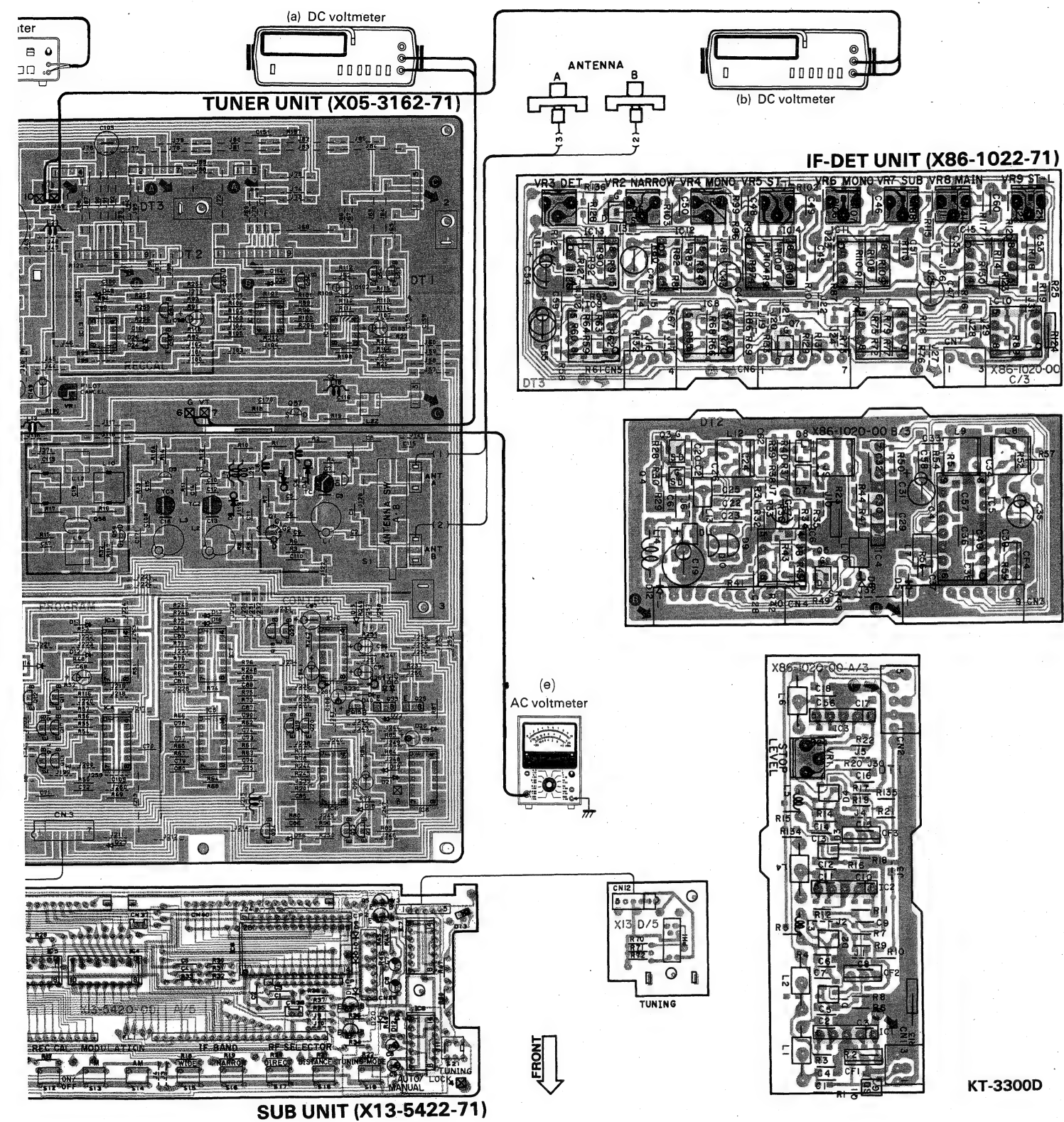
PC BOARD

COMPONENT SIDE VIEW



Refer to the schematic diagram for the values of resistors and capacitors.

PC BOARD
COMPONENT SIDE VIEW



(X05-3162-71)

	B	C	E
Q10	29.7V	11V	-
Q26	-	17.6V	14.5V
Q27	-15.1V	-21V	-14.6V
Q28	16.6V	-	17.5V
Q30	0V	-	-
Q34	-	REC CAL 14.3V (ON) 0V (OFF)	-
Q37	-	7.3V	1.9V
Q38	-	7.3V	3.0V
Q39	3.0V	15.5V	-
Q40	15.5V	-	-
Q41	-	17.4V (MONO) -14.4V (STEREO)	-
Q56	-	-	12.2V

	G ₁	G ₂	D	S
Q1	-	4.1V	11V	0V

	G	D	S
Q4	-	-	11.4V
Q5	4.0V	-	4.9V
Q7	0V	9.8V	-
Q8	-	29.4V	-
Q57	-	1.4V	12.2V
Q58	-	4.0V 12.3V	12.4V 4.0V
Q59	-	11.8V	-
Q60	-	-	REC CAL 7.3V (ON) 3.0V (OFF)

(X86-1022-71) (B/3)

IC4	
1	14.6V
2	13.7V
3	1.23V
4	0V
5	1.8V
6	7.3V
7	4.8V

IC5	
1	2.9V
2	2.9V
3	1.23V
4	0V
5	0V
6	5.6V
7	5.1V
8	5.6V
9	5.6V
10	5.6V
11	5.6V
12	4.7V
13	0.6V
14	0V
15	5.2V
16	0V

IC1

1	5.5V
3	0V
4	0V
5	3.9V
6	4V
7	2.6V

IC11

OUT	5.7V
GND	0.6V
IN	17.7V

IC14 (1/2 ~ 2/2)

1	12.9V (STOP) -13.0V (OFF)
5	29 (1.9V)

IC15 (2/2)

	WIDE	NARROW
5	2.3V	2.7V
6	4.9V	0V
7	-13.2V	13.3V

IC15 (1/2)

2	2.5V
---	------

IC17

2	0.9V
6	3.9V
17	2.3V
18	7.3V

IC6 (1/2)

2	7.3V
3	7.5V
8	14.6V

IC6 (2/2)

5	7.3V
6	7.3V
8	8.1V

IC16

1	7.9V
2	11.2V
3	-13.6V
4	11.5V
5	0V
6	0V
7	-14.5V
8	1.1V
9	13.6V
10	0V
11	0V
12	1.3V
13	-13.1V
14	11.2V

IC18

7	0V
8	7.3V

IC20

7	0V
---	----

IC22

8	14.5V
---	-------

IC21 (1/2 ~ 2/2)

1	1.37V
6	0V
7	1.37V

IC24 (1/2 ~ 2/2)

3	0V
5	0V

Refer to the schematic diagram for the values of resistors and capacitors.

(X86-1022-71) (A/3)

IC1

1	1.36V
2	1.36V
3	0V
4	12.4V
5	14.6V

IC2

1	1.36V
2	1.36V
3	0V
4	12.4V
5	14.6V

IC3

1	1.36V
2	1.36V
3	0V
4	13.6V
5	14.6V

(X13-5422-71) (A/5)

IC1

2	16.5V
3	17.1V
4	1.2V
5	2V
6	3V
7	16.5V
9	16.5V
10	16.5V
11	16.5V
13	0V
14	16.5V
15	16.5V
16	16.5V

IC2

1	0V
2	0V
3	0V
9	12V
10	0V
12	17.1V
13	5.6V
14	1.3V
17	0V
18	0V
19	0V
20	0.1V
21	16.3V
22	0V

(X86-1022-71) (C/3)

IC8

1	7.3V
2	7.3V
3	0V
4	7.3V
5	7.3V
6	7.3V
7	7.3V
8	7.3V

IC9

1	7.3V
2	7.3V
3	0V
4	7.3V
5	7.3V
6	7.3V
7	7.3V
8	7.3V

IC3

1	0V
2	6.5V
3	6.5V
4	7.1V
5-12	16.2V
13-16	0V
17	4.3V
18	17.1V

IC4

1-9	0V
10	17.1V
11-18	0V

IC5

2	2.2V
4	3.1V
9	0V
10	17.1V
15	16V
17	16V

IC6

1-4	0V
5	0.7V
6-7	16.1V
8	0.7V
9-13	16.1V
14	0V
15-20	16.1V
21	0.7V
22-27	16.1V
28	4.8V

IC7 (1/4 ~ 3/4)

1	7.3V
2	7.3V
3	0V
4	7.3V
5	7.3V
6	7.3V
8	7.3V

(X13-5422-71) (C/5)

IC9 (1/2 ~ 2/2)

1	13V
2	0.9V
3	1.1V
4	0V
5	5.7V
6	5.5V
7	5.6V
8	14.9V

IC10 (1/4 ~ 4/4)

1	2.3V
2	0V
3	4.8V
4	0.2V
5	4.5V
7	0V
8	0V
9	0V
10	4.5-4.8V
11	4.8V
12	0V
14	4.8V

PC BOARD

FOIL SIDE VIEW

2

3

4

5

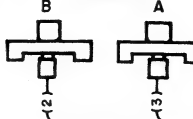
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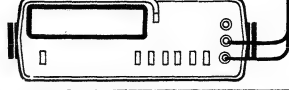
(b) DC voltmeter



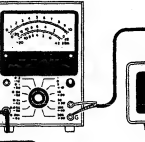
ANTENNA



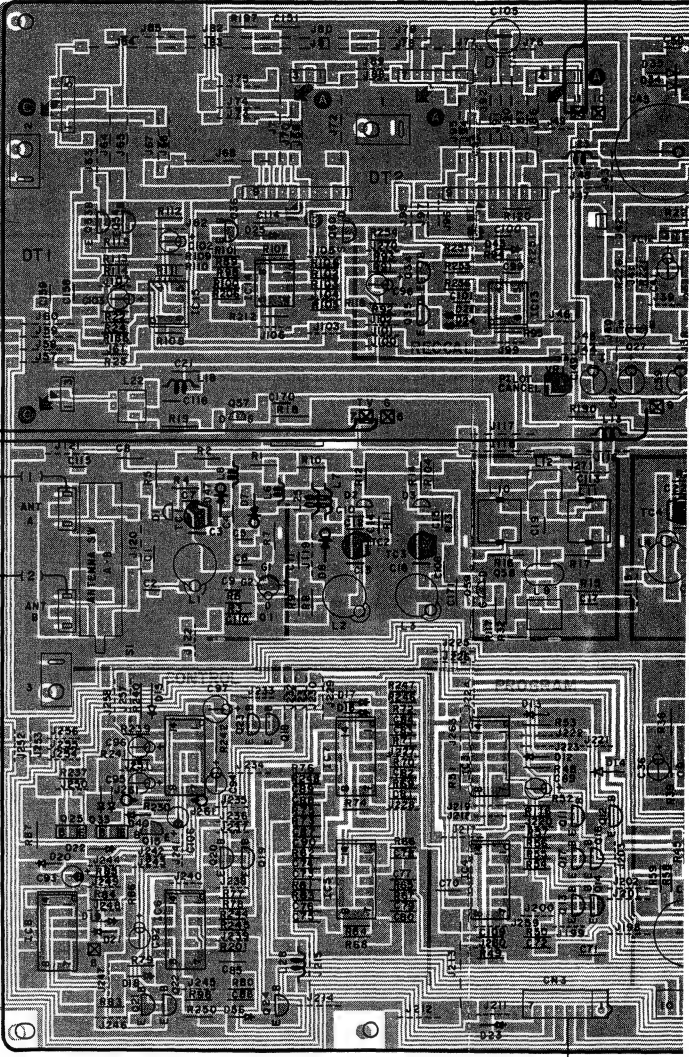
(a) DC voltmeter



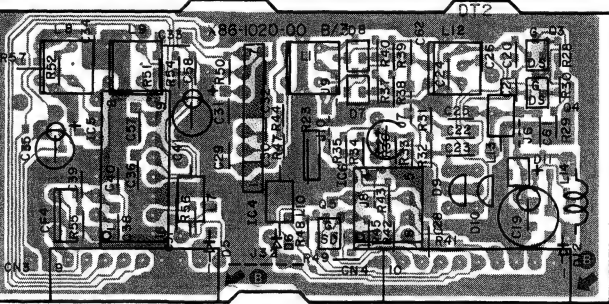
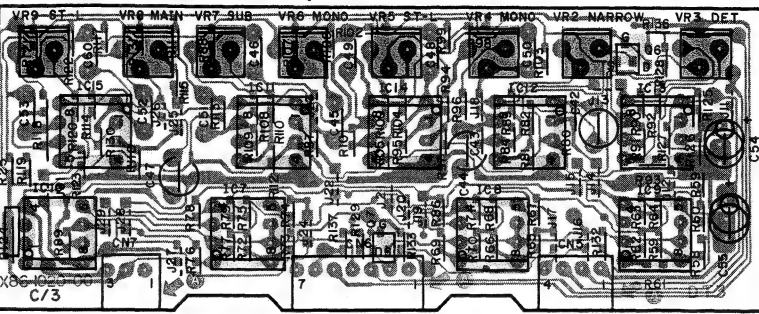
AC voltmeter



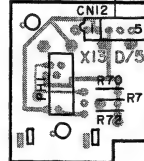
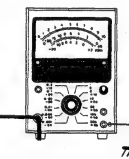
TUNER UNIT (X05-3162-71)



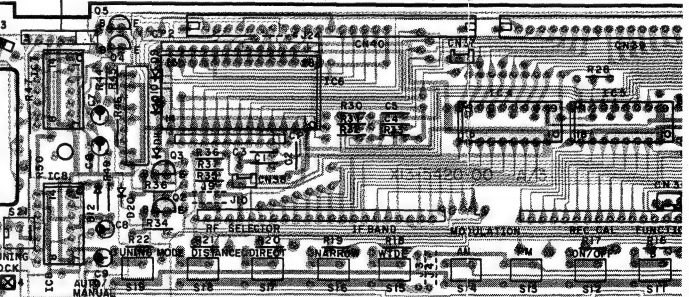
IF-DET UNIT (X86-1022-71)



(e) AC voltmeter



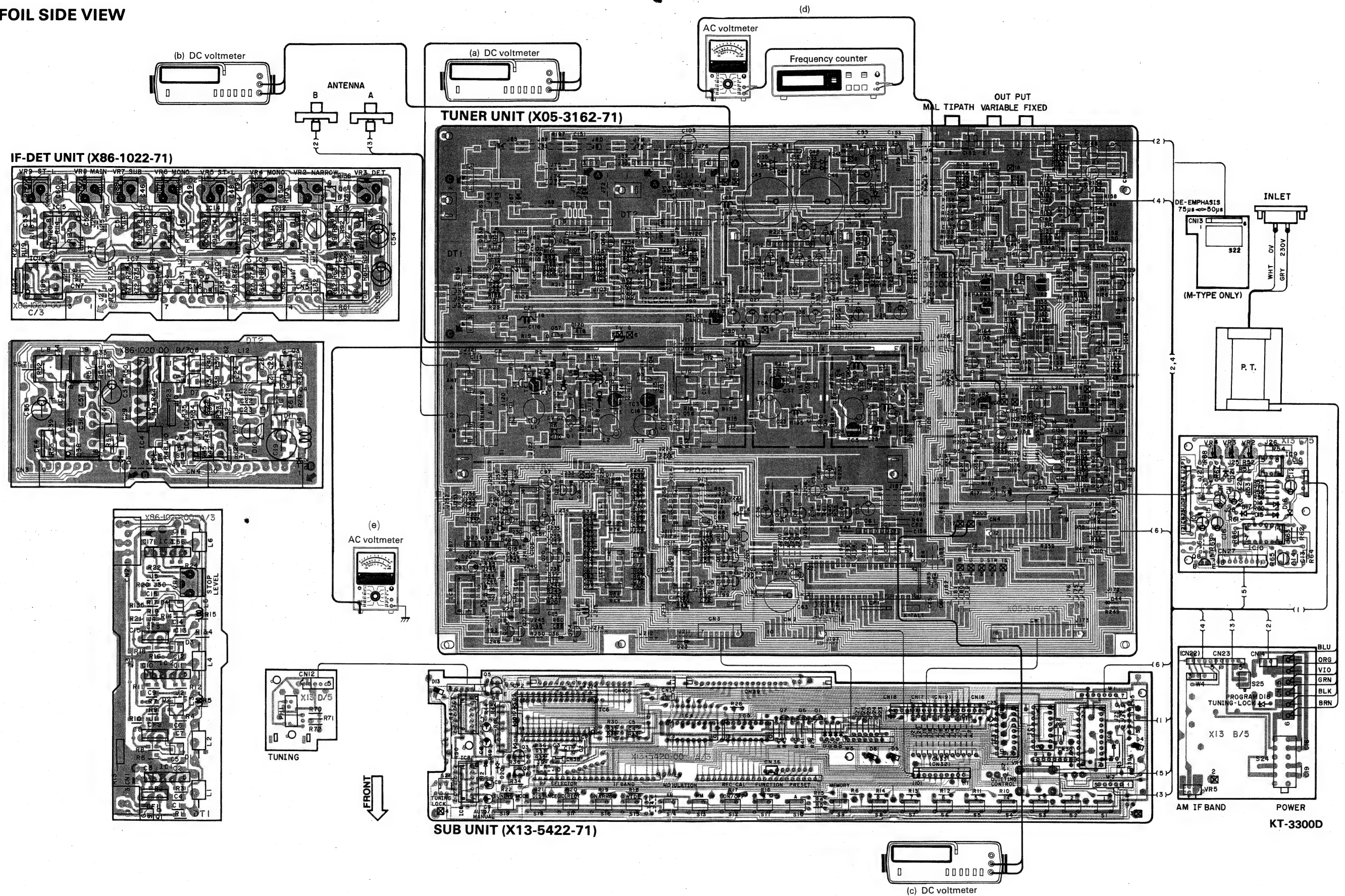
TUNING



SUB UNIT (X13-5422-71)

PC BOARD

FOIL SIDE VIEW



2SA733(A)
2SC2003
2SC945(A)
2SD863

MC1495L

2SD1266

2SA937F
2SC2021F

2SA995
2SC2291

2SB941

2SK125
2SK125T
2SK246

2SK364

2SK122

2SK161
2SK241

2SK211
2SK302

2SK425

NJM4200D
NJM4560D

NJM5532D-D

TD6104D

TD6301AP

μPD4001BC
μPD4013BC

μPD4069UBC

LA1231NS
LB1494

μPC1163HA

BA668A

LB1290

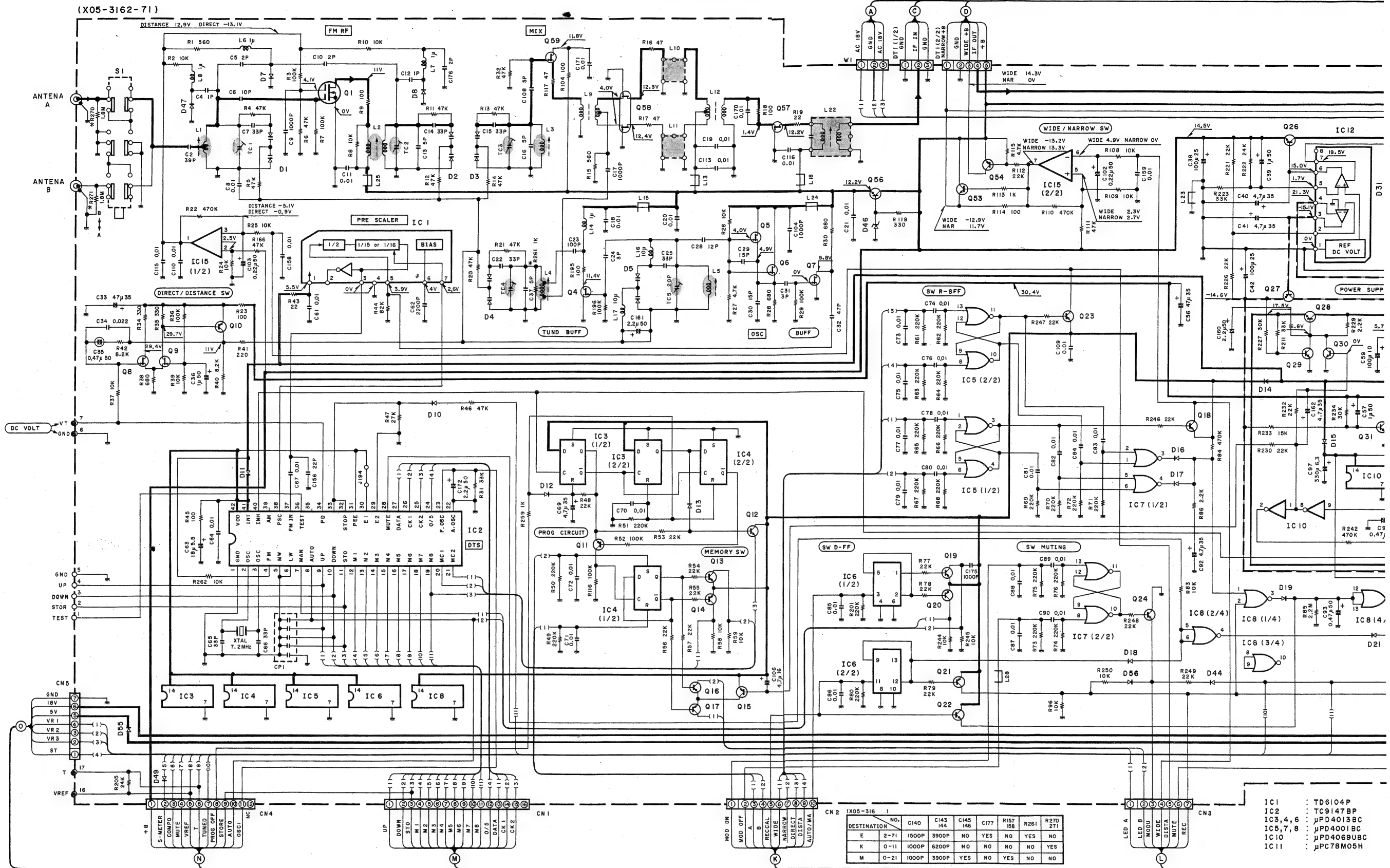
AN6562
M5218P

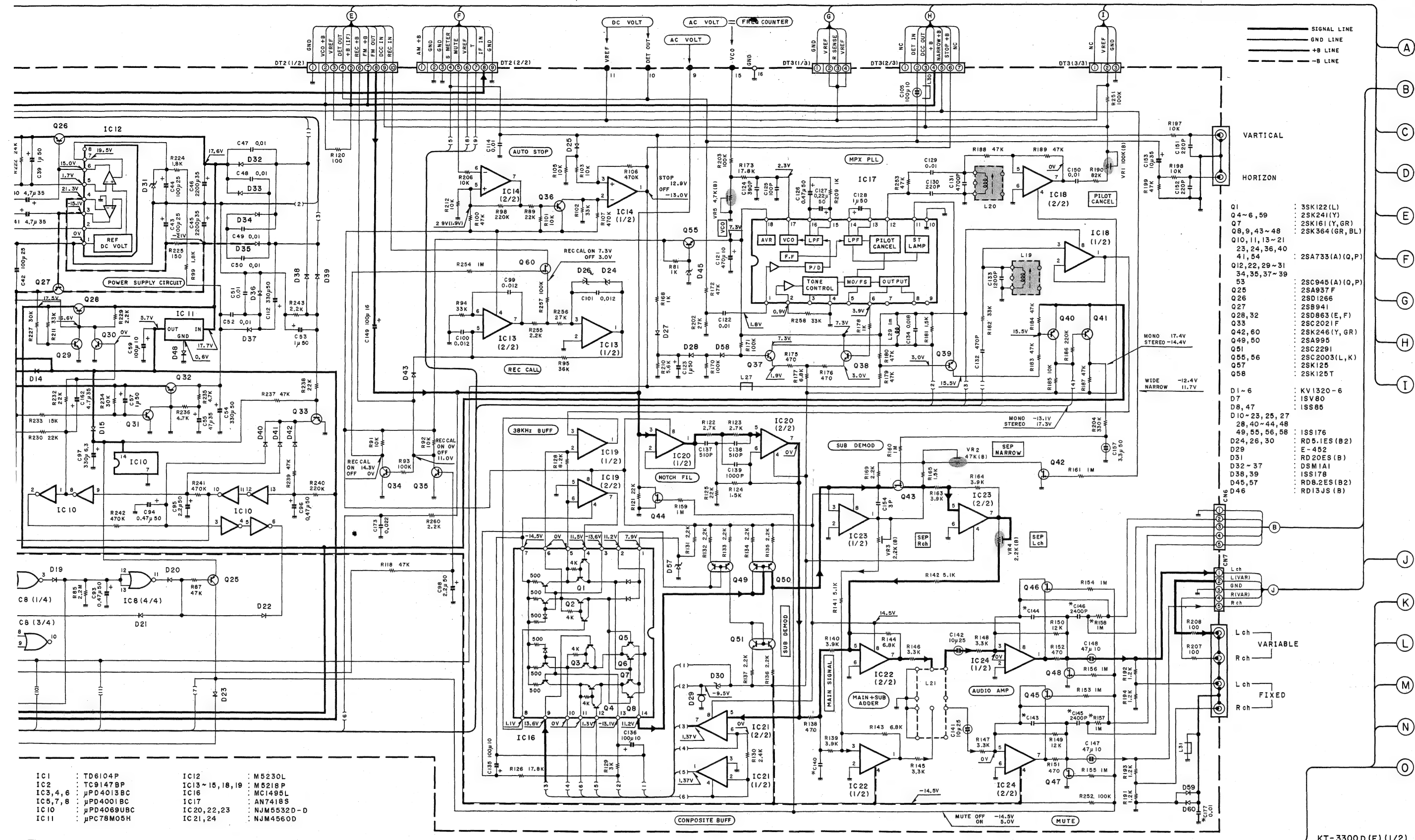
TC9147BP

LB1473

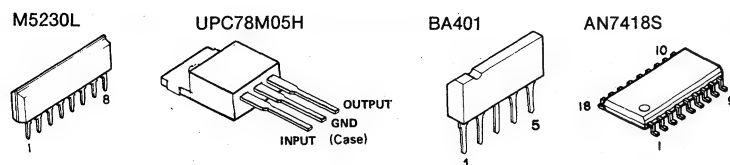
M5230L

UPC7E





KT-3300D (E) (1/2)



CAUTION: For continued safety, replace safety critical components only with manufacture's recommended parts (refer to parts list). Δ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

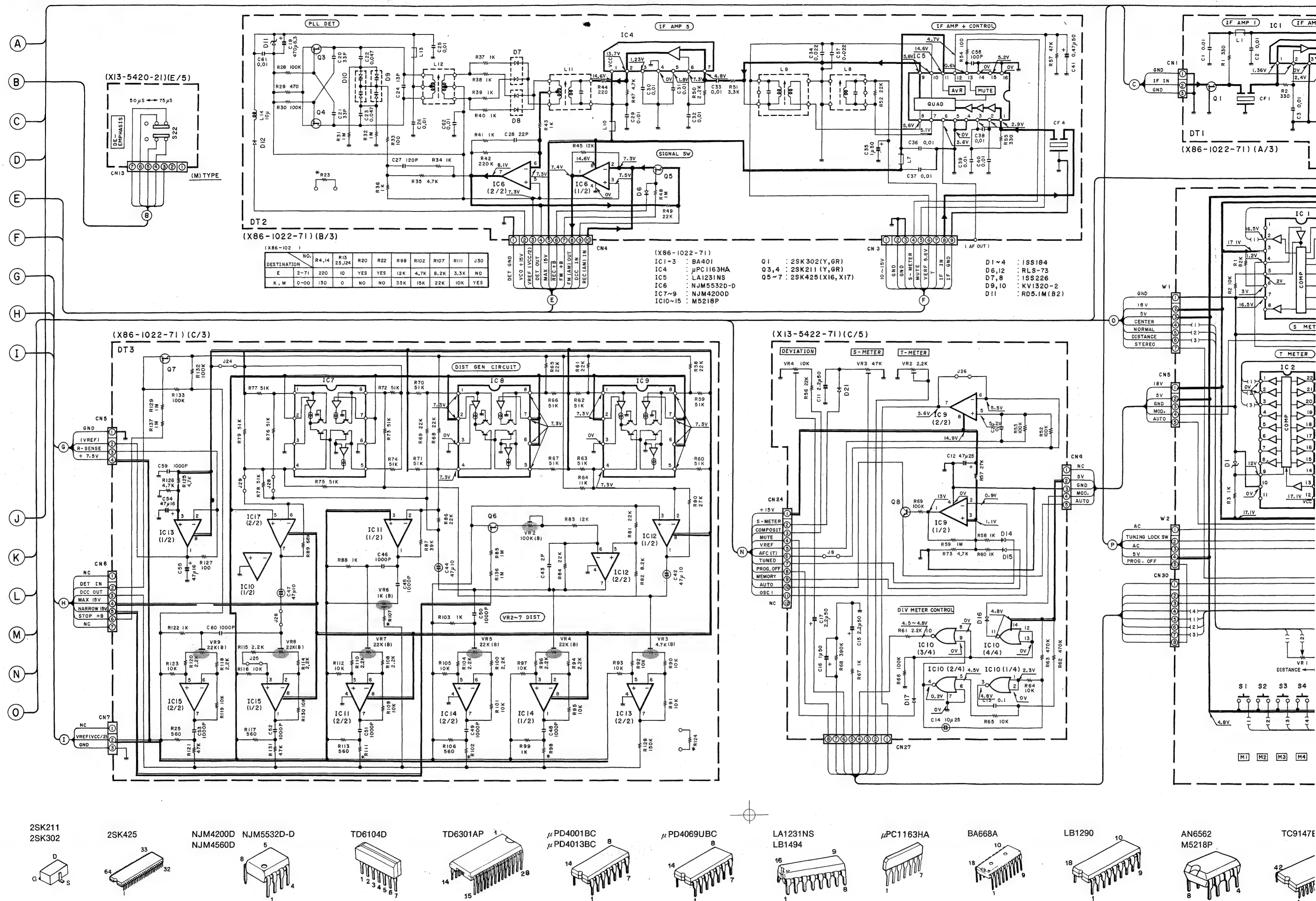
DC voltages are as measured with a high impedance voltmeter during reception of the FM broadcast signal (with a signal strength of 60 dB at the ANT terminal). Values may vary slightly due to variations between individual instruments or/and units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance pendant la réception d'un signal de programme FM (avec une force de signal de 60 dB à la borne ANT). Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

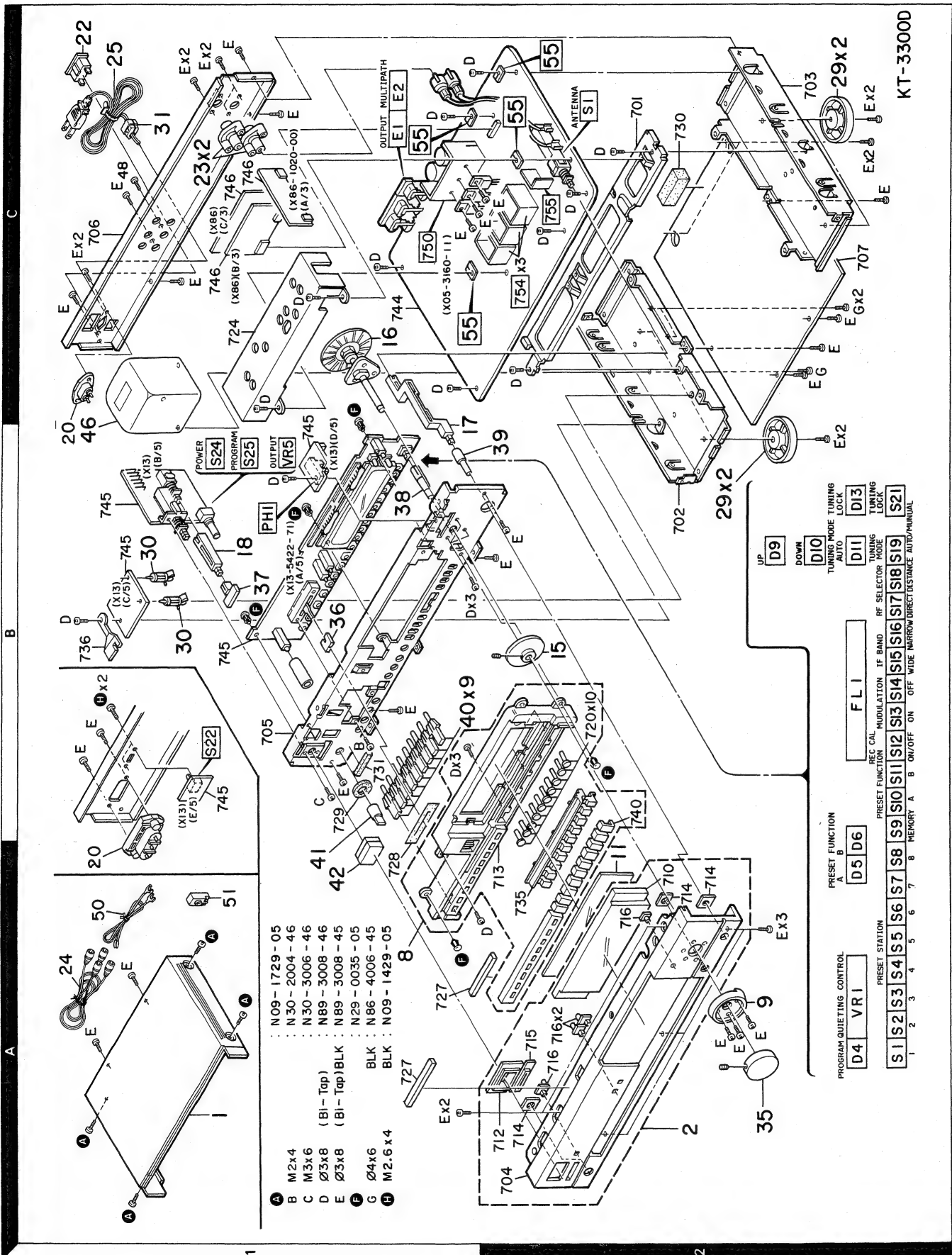
Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Spannungsmesser bei Empfang eines UKW-Signals (mit einer Feldstärke von 60 dB am Antennenanschluß) gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u. U. geringfügig.

KT-3300D
KENWOOD

TC9147E



EXPLODED VIEW



Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Telle ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
KT-3300D						
1	1A	*	A01-1503-01	METALLIC CABINET		
2	2A	*	A20-4951-02	PANEL ASSY		
8	1A	*	B07-1482-02	ESCUTCHEON ASSY		
9	2A	*	B07-1487-04	ESCUTCHEON (TUNING KNOB)		
11	2A	*	B11-0135-04	COLOR FILTER		
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0122-13	WARRANTY CARD	E	
-		*	B50-6367-00	INSTRUCTION MANUAL(ENGLISH)		
-		*	B50-6368-00	INSTRUCTION MANUAL(FRENCH)	ME	
-		*	B50-6369-00	INSTRUCTION MANUAL(SPANISH)	M	
-		*	B50-6370-00	INSTRUCTION MANUAL(G,D,I)	E	
-			B58-0269-04	CAUTION CARD	K	
-			B58-0803-03	CAUTION CARD	E	
15	2B		D01-0054-04	FLYWHEEL (TUNING)		
16	1C	*	D20-0177-03	DIAL SHAFT ASSY		
17	1B	*	D21-1142-04	EXTENSION SHAFT(ANTENNA)		
18	1B	*	D21-1144-04	EXTENSION SHAFT(PROGRAM)		
△ 20	1B		E03-0047-05	AC INLET	E	
△ 20	1C		E03-0102-25	AC INLET	M	
△ 22	1C		E03-0041-05	AC OUTLET	K	
23	1C		E04-0006-05	RF COAXIAL CABLE RECEPTACLE		
24	1B		E30-0505-05	AUDIO CORD		
△ 25	1C		E30-0974-05	AC POWER CORD	K	
△ 25	1C		E30-1305-15	AC POWER CORD (INLET)	M	
△ 25	1C		E30-1329-05	AC POWER CORD (INLET)	E	
-		*	H01-7283-04	ITEM CARTON CASE		
-		*	H10-3398-02	POLYSTYRENE FOAMED FIXTURE		
-		*	H10-3399-02	POLYSTYRENE FOAMED FIXTURE		
-		*	H12-1146-14	PACKING FIXTURE		
-			H25-0181-04	PROTECTION BAG (150X260X0.05)		
-			H25-0224-04	PROTECTION BAG (800X400X0.03)		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)		
29	2B,2C	*	J02-0190-05	FOOT		
30	1B		J19-0514-05	UNIT HOLDER		
31	1C		J42-0083-05	POWER CORD BUSHING	K	
-			J61-0307-05	WIRE BAND		
35	2A		K21-0405-04	KNOB (TUNING)		
36	1B		K27-1292-04	KNOB (BUTTON) QUIETING CONTROL		
37	1B		K27-1514-04	KNOB (BUTTON) PROGRAM		
38	1B	*	K27-1662-04	KNOB (BUTTON) TUNING LOCK		
39	2B	*	K27-1666-04	KNOB (BUTTON) ANTENNA		
40	1B		K29-1588-04	KNOB (BUTTON) PRESET, MEMORY		
41	1A		K29-2201-04	KNOB (OUTPUT VR)		
42	1A		K29-2432-03	KNOB ASSY(BUTTON)POWER		
△ 46	1B	*	L01-7271-05	POWER TRANSFORMER	K	
△ 46	1B	*	L01-7272-05	POWER TRANSFORMER	E	
△ 46	1B	*	L01-7274-05	POWER TRANSFORMER	M	
48	1C		N09-0292-05	STEPPED SCREW (Ø3X19) GND		
A 1A	1A		N09-1729-05	TAPTITE SCREW (CASE)		
F 1B,2B	1B,2B		N29-0035-05	PUSH RIVET (3.5X5.5)		

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△ indicates safety critical components.

× New Parts

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Telle ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
H	1C		N09-1429-05	MACHINE SCREW (M2.6X4)SLIDE	M	
R1			R92-0173-05	RC 2.2M M 1/2W	K	
50	1A		T90-0132-05	T TYPE ANTENNA		
51	1A		T90-0136-05	ANTENNA ADAPTOR		
TUNER UNIT (X05-3162-71)						
C2			CC45FSL1H390J	CERAMIC 39PF J		
C4			CC45FSL1H010C	CERAMIC 1.0PF C		
C5			CC45FSL1H020C	CERAMIC 2.0PF C		
C6			CC45FSL1H100D	CERAMIC 10PF D		
C7			CC45FCH1H330J	CERAMIC 33PF J		
C8			C91-0769-05	CERAMIC 0.01UF M		
C9			CK45FB1H102K	CERAMIC 0.0H10UF K		
C10			CC45FSL1H020C	CERAMIC 2.0PF C		
C11			CK45FF1H103Z	CERAMIC 0.1H10UF Z		
C12			CC45FSL1H010C	CERAMIC 1.0PF C		
C13			CC45FTH1H050C	CERAMIC 5.0PF C		
C14 ,15			CC45FCH1H330J	CERAMIC 33PF J		
C16			CC45FTH1H050C	CERAMIC 5.0PF C		
C17			CK45FB1H102K	CERAMIC 0.0H10UF K		
C18 -20			CK45FF1H103Z	CERAMIC 0.1H10UF Z		
C21			C91-0769-05	CERAMIC 0.01UF M		
C22			CC45FCH1H330J	CERAMIC 33PF J		
C23			CC45FSL1H101J	CERAMIC 100PF J		
C24			CC45FSL1H030C	CERAMIC 3.0PF C		
C25		*	CC45FTH1H330J	CERAMIC 33PF J		
C28			CC45FTH1H120J	CERAMIC 12PF J		
C29 ,30			CC45FCH1H150J	CERAMIC 15PF J		
C31			CC45FSL1H030C	CERAMIC 3.0PF C		
C32			C91-0737-05	CERAMIC 47PF J		
C33			CE04KW1V470M	ELECTR0 47UF 35WV		
C34			CF92FV1H223J	MF 0.022UF J		
C35			C90-1331-05	NP-ELEC 0.47UF 50WV		
C36			CE04KW1H010M	ELECTR0 1.0UF 50WV		
C37			CC45FTH1H050C	CERAMIC 5.0PF C		
C38			CE04KW1E101M	ELECTR0 100UF 25WV		
C39			CE04KW1H010M	ELECTR0 1.0UF 50WV		
C40 ,41			CE04KW1V4R7M	ELECTR0 4.7UF 35WV		
C42 -44			CE04KW1E101M	ELECTR0 100UF 25WV		
C45 ,46		*	C90-1415-15	ELECTR0 2200UF 35WV		
C47 -52			CK45FF1H103Z	CERAMIC 0.1H10UF Z		
C53			CE04KW1H010M	ELECTR0 1.0UF 50WV		
C54			CE04KW1H331M	ELECTR0 330UF 50WV		
C55 ,56			CE04KW1V470M	ELECTR0 47UF 35WV		
C57			CE04KW1H010M	ELECTR0 1.0UF 50WV		
C59			CE04KW1A1C1M	ELECTR0 100UF 10WV		
C61			C91-0769-05	CERAMIC 0.01UF M		
C62			C91-0761-05	CERAMIC 0.0022UF M		
C63		*	C90-1416-05	ELECTR0 18UF 5.5WV		
C64			C91-0769-05	CERAMIC 0.01UF M		
C65 ,66			CC45FCH1H330J	CERAMIC 33PF J		
C67			C91-0769-05	CERAMIC 0.01UF M		
C69			CE04KW1V4R7M	ELECTR0 4.7UF 35WV		
C70 -90			C91-0769-05	CERAMIC 0.01UF M		

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 indicates safety critical components.

KT-3300D

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
C92			CE04KW1V4R7M	ELECTR0 4.7UF 35WV		
C93			CE04JW1HR47M	ELECTR0 0.47UF 50WV		
C94			CE04KW1HR47M	ELECTR0 0.47UF 50WV		
C95			CE04KW1H2R2M	ELECTR0 2.2UF 50WV		
C96			CE04KW1HR47M	ELECTR0 0.47UF 50WV		
C97			CE04KW0J331M	ELECTR0 330UF 6.3WV		
C98			CE04KW1H2R2M	ELECTR0 2.2UF 50WV		
C99 -101			CF92FV1H123J	MF 0.012UF J		
C102,103			CE04KW1HR22M	ELECTR0 0.22UF 50WV		
C104			C91-0757-05	CERAMIC 0.001UF K		
C105		*	C90-1499-05	NP-ELEC 100UF 10WV		
C106			CE04JW1C4R7M	ELECTR0 4.7UF 16WV		
C108			CC45FSL1H050C	CERAMIC 5.0PF C		
C109,110			C91-0769-05	CERAMIC 0.01UF M		
C112			CE04KW1H331M	ELECTR0 330UF 50WV		
C113			CK45FF1H103Z	CERAMIC 0.1H0UF Z		
C114			C91-0769-05	CERAMIC 0.01UF M		
C115,116			CK45FF1H103Z	CERAMIC 0.1H0UF Z		
C121			CE04KW1A471M	ELECTR0 470UF 10WV		
C122			CF92FV1H103J	MF 0.010UF J		
C123			CE04KW1H010M	ELECTR0 1.0UF 50WV		
C124			CQ09FS1H391JY0	P0LYSTY 390PF J		
C125			CQ09FS1H101JY0	P0LYSTY 100PF J		
C126			CE04GW1HR47M	LL-ELEC 0.47UF 50WV		
C127			CE04GW1HR22M	LL-ELEC 0.22UF 50WV		
C128			CE04GW1H010M	LL-ELEC 1.0UF 50WV		
C129			C91-0769-05	CERAMIC 0.01UF M		
C130			C91-0749-05	CERAMIC 220PF K		
C131			CQ09FS1H472J	P0LYSTY 4700PF J		
C132			CQ09FS1H471J	P0LYSTY 470PF J		
C133			CQ09FS1H122J	P0LYSTY 1200PF J		
C134			CF92FV1H183J	MF 0.018UF J		
C135,136			CE04KW1A101M	ELECTR0 100UF 10WV		
C137,138			CQ09FS1H511J	P0LYSTY 510PF J		
C139			CQ09FS1H102J	P0LYSTY 1000PF J		
C140			CQ09FS1H102J	P0LYSTY 1000PF J	MK	
C140			CQ09FS1H152J	P0LYSTY 1500PF J	E	
C141,142			C90-1333-05	NP-ELEC 10UF 25WV		
C143,144			CF92FV1H392J	MF 3900PF J	ME	
C143,144		*	CF92FV1H622J	MF 6200PF J	K	
C145,146			CF92FV1H242J	MF 2400PF J	M	
C147,148			C90-1334-05	NP-ELEC 47UF 10WV		
C149			CE04KW1C101M	ELECTR0 100UF 16WV		
C150			CF92FV1H103J	MF 0.010UF J		
C151,152			C91-0749-05	CERAMIC 220PF K		
C153			CE04KW1V100M	ELECTR0 10UF 35WV		
C154			CC45FSL1H030C	CERAMIC 3.0PF C		
C156			CC45FSL1H220J	CERAMIC 22PF J		
C157		*	C90-1351-05	NP-ELEC 3.3UF 50WV		
C158,159			CK45FF1H103Z	CERAMIC 0.1H0UF Z		
C160			CE04KW1H2R2M	ELECTR0 2.2UF 50WV		
C161			CE04KW1H2R2M	ELECTR0 2.2UF 50WV		
C162			CE04KW1V4R7M	ELECTR0 4.7UF 35WV		
C170			CK45FF1H103Z	CERAMIC 0.1H0UF Z		
C171			C91-0769-05	CERAMIC 0.01UF M		

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✕ New Parts

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Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
C172 C173 C175 C176 C177			CE04KW1H2R2M CF92FV1H223J CK45FB1H102K CC45FSL1H020C CK45FF1H103Z	ELECTRO 2.2UF 50WV MF 0.022UF J CERAMIC 0.0H10UF K CERAMIC 2.0PF C CERAMIC 0.1H10UF Z	E	
TC1 -5			C05-0302-05	CERAMIC TRIMMER CAPACITOR(11PF		
55	1C,2C		E23-0149-05	TERMINAL		
E1	1C		E13-0441-05	PHONE JACK (4P)OUTPUT		
E2	1C		E13-0217-05	PHONE JACK (2P)MULTIPATH		
-			L77-0578-05	CRYSTAL RESONATOR(7.2MHZ)		
L1		*	L31-0545-05	FM-RF COIL		
L2		*	L31-0546-05	FM-RF COIL		
L3		*	L31-0545-05	FM-RF COIL		
L4			L31-0501-05	FM-RF COIL		
L5			L32-0270-05	FM OSCILLATING COIL		
L6			L40-1092-17	SMALL FIXED INDUCTOR(1UH,M)		
L7			L40-1092-14	SMALL FIXED INDUCTOR(1.0UH,M)		
L8			L40-1092-17	SMALL FIXED INDUCTOR(1UH,M)		
L9			L39-0098-05	MATCHING COIL		
L10 ,11			L30-0381-05	FM IFT		
L12			L39-0098-05	MATCHING COIL		
L13		*	L92-0017-05	FERRITE CORE		
L14			L40-1092-17	SMALL FIXED INDUCTOR(1UH,M)		
L15		*	L92-0017-05	FERRITE CORE		
L16			L40-1001-17	SMALL FIXED INDUCTOR(10UH,K)		
L17			L40-1001-14	SMALL FIXED INDUCTOR(10UH,K)		
L18		*	L92-0017-05	FERRITE CORE		
L19 ,20			L35-0059-05	MPX COIL		
L21		*	L79-0728-05	LC FILTER		
L22			L30-0434-05	FM IFT		
L23 -25		*	L92-0017-05	FERRITE CORE		
L27 ,28		*	L92-0017-05	FERRITE CORE		
L29			L39-0143-05	PEAKING COIL		
L30 ,31		*	L92-0017-05	FERRITE CORE		
CP1			R90-0545-05	COMPOSITE ELEMENTS		
R16 ,17			RD14GB2E470J	FL-PROOF RD 47 J 1/4W	EK	
R19			RD14GB2E220J	FL-PROOF RD 22 J 1/4W	EK	
R23			RD14GB2E101J	FL-PROOF RD 100 J 1/4W	EK	
R43			RD14GB2E220J	FL-PROOF RD 22 J 1/4W	EK	
R126			RN14BK2C1782F	RN 17.8K F 1/6W		
R173			RN14BK2C1782F	RN 17.8K F 1/6W		
R225			RD14GB2E151J	FL-PROOF RD 150 J 1/4W	EK	
R270,271			RC05GF2H185M	RC 1.8M M 1/2W	K	
VR1			R12-5046-05	TRIMMING PNT. (100K)PILST CANS		
VR2			R12-3099-05	TRIMMING PNT. (47K)NALLOW		
VR3 ,4			R12-1067-05	TRIMMING PNT. (2.2K)SEPARATION		
VR5			R12-1069-05	TRIMMING PNT. (4.7K)VCO		
S1	2C	*	S40-6024-05	PUSH SWITCH (ANTENNA)		
D1 -5			KV1320-5	VARIABLE CAPACITANCE DIODE		
D7			1SV80	DIODE		
D8			1SS85	DIODE		
D10 -23			1SS176	DIODE		
D24			RD5.1ES(B2)	ZENER DIODE		

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KT-3300D

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D25			1SS176	DIODE		
D26			RD5.1ES(B2)	ZENER DIODE		
D27 ,28			1SS176	DIODE		
D29		*	E-452	CONSTANT CURRENT DIODE		
D30			RD5.1ES(B2)	ZENER DIODE		
D31		*	RD20ES(B)	ZENER DIODE		
D32 -37			DSM1A1	DIODE		
D38 ,39			1SS178	DIODE		
D40 -44			1SS176	DIODE		
D45			RDB.2ES(B2)	ZENER DIODE		
D46			RD13JS(B)	ZENER DIODE		
D47			1SS85	DIODE		
D48 ,49			1SS176	DIODE		
D55 ,56			1SS176	DIODE		
D57			RDB.2ES(B2)	ZENER DIODE		
D58 -60			1SS176	DIODE		
IC1			TD6104P	IC(PRE SCALER)		
IC2			TC9147BP	IC(DIGITAL TUNING SYSTEM)		
IC3 ,4			UPD4013BC	IC(D FLIP-FLØP X2)		
IC5			UPD4001BC	IC(NØR X6)		
IC6			UPD4013BC	IC(D FLIP-FLØP X2)		
IC7 ,8			UPD4001BC	IC(NØR X6)		
IC10			UPD4069UBC	IC(INVERTER X6)		
IC11			UPC78M05H	IC(VØLTAGE REGULATOR/ +5V)		
IC12		*	M5230L	IC(VØLTAGE REGULATOR)		
IC13-15			M5218P	IC(OP AMP X2)		
IC16		*	MC1495L	IC(MULTIPLIER)		
IC17			AN7418S	IC(FM MPX)		
IC18,19			M5218P	IC(OP AMP X2)		
IC20			NJM5532D-D	IC(OP AMP X2)		
IC21			NJM4560D	IC(OP AMP X2)		
IC22,23			NJM5532D-D	IC(OP AMP X2)		
IC24			NJM4560D	IC(OP AMP X2)		
Q1		*	3SK122(L)	FET		
Q4 -6			2SK241(Y)	FET		
Q7			2SK161(Y,GR)	FET		
Q8 ,9			2SK364(GR,BL)	FET		
Q10 ,11			2SA733(A)(Q,P)	TRANSISTØR		
Q12			2SC945(A)(Q,P)	TRANSISTØR		
Q13 -21			2SA733(A)(Q,P)	TRANSISTØR		
Q22			2SC945(A)(Q,P)	TRANSISTØR		
Q23 ,24			2SA733(A)(Q,P)	TRANSISTØR		
Q25			2SA937F	TRANSISTØR		
Q26			2SD1266	TRANSISTØR		
Q27			2SB941	TRANSISTØR		
Q28			2SD863(E,F)	TRANSISTØR		
Q29 -31			2SC945(A)(Q,P)	TRANSISTØR		
Q32			2SD863(E,F)	TRANSISTØR		
Q33			2SC2021F	TRANSISTØR		
Q34 ,35			2SC945(A)(Q,P)	TRANSISTØR		
Q36			2SA733(A)(Q,P)	TRANSISTØR		
Q37 -39			2SC945(A)(Q,P)	TRANSISTØR		
Q40 ,41			2SA733(A)(Q,P)	TRANSISTØR		
Q42			2SK246(Y,GR)	FET		
Q43 -48			2SK364(GR,BL)	FET		

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Q49 ,50 Q51 Q53 Q54 Q55 ,56 Q57 Q58 Q59 Q60			2SA995 2SC2291 2SC945(A)(Q,P) 2SA733(A)(Q,P) 2SC2003(L,K) 2SK125 2SK125T 2SK241(Y) 2SK246(Y,GR)	DUAL TRANSISTOR DUAL TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR FET DUAL FET FET FET		
SUB-CIRCUIT UNIT (X13-5422-71)						
D4 -6 D9 -11 D13	2A 2B 2B		B30-1012-05 B30-0431-05 B30-1012-05	LED(SLP-981C-50)PR0G,PRE FUNC LED(LN21CPH)UP/D0WN,TUN MODE LED(SLP-981C-50)TUNING LOCK		
C1 -3 C4 ,5 C6 ,7 C8 C9		*	C91-0757-05 C91-0769-05 C90-0496-05 C90-0482-05 C90-0822-05	CERAMIC 0.001UF K CERAMIC 0.01UF M ELECTRO 100UF 6.3WV ELECTRO 4.7UF 25WV ELECTRO 47UF 16WV		
C11 C12 C13 C14 C15			CE04KW1H2R2M CE04KW1E470M CF92FV1H104J C90-1332-05 CE04KW1H2R2M	ELECTRO 2.2UF 50WV ELECTRO 47UF 25WV MF 0.10UF J NP-ELEC 10UF 25WV ELECTRO 2.2UF 50WV		
C16 C17 C18 -20			CE04KW1H010M CE04KW1H2R2M CF92FV1H104J	ELECTRO 1.0UF 50WV ELECTRO 2.2UF 50WV MF 0.10UF J		
CP1 CP2 VR1 VR2 VR3	2A	*	R90-0441-05 R90-0416-05 R13-3040-05 R12-1067-05 R12-3099-05	MULTI-COMP 10KX9 J 1/6W MULTI-COMP 10KX13 J 1/6W POTENTIOMETER(QUIETING CONTROL TRIMMING POT.(2.2K)T-METER TRIMMING POT.(47K) S-METER		
VR4 VR5	1B	*	R12-3096-05 R10-9002-05	TRIMMING POT.(10K) DEVIATION POTENTIOMETER(OUTPUT VR)		
S1 -19 S21 S22 S24 S25	2A,2B 2B 1B 1B		S40-1064-05 S40-2323-05 S31-2072-05 S40-4061-05 S40-2193-05	PUSH SWITCH (PRESET STATIONS) PUSH SWITCH (TUNING LOCK) SLIDE SWITCH (DE-EMPHASIS) PUSH SWITCH (POWER) PUSH SWITCH (PROGRAM)	M	
PH1	1B		T95-0024-05	OPTO ISOLATOR		
D1 D12 D12 D14 -17 D14 -17		*	RD12ES(B2) 1SS133 1SS176 1SS133 1SS176	DIODE DIODE DIODE DIODE DIODE		
D18 D18 D20 ,21 D20 ,21 FL1			HZS2.7N(B) RD2.7ES(B) 1SS133 1SS176 CPS185GR	ZENER DIODE ZENER DIODE DIODE DIODE FLUORESCENT INDICATOR TUBE		
IC1 IC2 IC3 IC4 ,5		*	LB1494 LB1473 BA668A LB1290	IC(DC LEVEL METER) IC(1 OF 16PT LED DRIVER) IC(12PT FL PEAK LEVEL METER DR IC(8CH TRANSISTOR ARRAY)		

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IC6 IC7 IC8 IC9 IC10			TD6301AP UPD4001BC UPD4013BC AN6562 UPD4001BC	IC(FL/LED/LCD FREQ DISPLAY DR) IC(NOR X6) IC(D FLIP-FL0P X2) IC(OP AMP X2) IC(NOR X6)		
Q2 -5 Q6 ,7 Q8			2SC945(A)(Q,P) 2SC945(A)(Q,P) 2SC945(A)(Q,P)	TRANSISTOR TRANSISTOR TRANSISTOR		
IF-DET UNIT (X86-1022-71)						
C1 -6 C7 C8 -12 C13 C14 -18		*	C93-0012-05 CK41FB1H221K C93-0012-05 CK41FB1H221K C93-0012-05	CYLND CHIP C 0.01UF M CYLND CHIP C 220PF K CYLND CHIP C 0.01UF M CYLND CHIP C 220PF K CYLND CHIP C 0.01UF M		
C19 C20 ,21 C22 ,23 C24 C25 ,26		*	CE04KW0J471M CC41FSL1H330J CK73EB1E473K CC41FUJ1H130J C93-0012-05	ELECTR0 470UF 6.3WV CYLND CHIP C 33PF J CHIP C 0.047UF K CYLND CHIP C 13PF J CYLND CHIP C 0.01UF M		
C27 C28 C29 -33 C34 C35		*	C009FS1H121J CC41FSL1H220J C93-0012-05 C93-0013-05 CE04KW1H010M	POLYSTY 120PF J CYLND CHIP C 22PF J CYLND CHIP C 0.01UF M CERAMIC 22000PF 25WV ELECTR0 1.0UF 50WV		
C36 -40 C41 C42 C43 C44		*	C93-0012-05 CE04KW1HR47M C90-1334-05 CC41FSL1H020C C90-1334-05	CYLND CHIP C 0.01UF M ELECTR0 0.47UF 50WV NP-ELEC 47UF 10WV CYLND CHIP C 2.0PF C NP-ELEC 47UF 10WV		
C45 ,46 C47 C48 -53 C54 ,55 C56		*	CF92FV1H102J C90-1334-05 CF92FV1H102J C90-0822-05 C93-0012-05	MF 1000PF J NP-ELEC 47UF 10WV MF 1000PF J ELECTR0 47UF 16WV CYLND CHIP C 0.01UF M		
C57 C58 C59 C60 C61 ,62		*	C93-0013-05 CK41FA1H101K CK41FY1E102M CF92FV1H102J C93-0012-05	CERAMIC 22000PF 25WV CYLND CHIP C 100PF K CYLND CHIP C 1000PF M MF 1000PF J CYLND CHIP C 0.01UF M		
CF1 -4 CF1 -4 L1 ,2 L3 L4		*	L72-0190-05 L72-0505-05 L92-0018-05 L40-1092-16 L92-0018-05	CERAMIC FILTER CERAMIC FILTER FERRITE CORE SMALL FIXED INDUCTOR(10UH,M) FERRITE CORE	E MK	
L5 L6 ,7 L8 L9 L10		*	L40-1092-16 L92-0018-05 L39-0128-05 L30-0435-05 L92-0018-05	SMALL FIXED INDUCTOR(10UH,M) FERRITE CORE PEAKING COIL FM IFT FERRITE CORE		
L11 L12 L13 L14		*	L30-0434-05 L32-0294-05 L92-0018-05 L40-1001-14	FM IFT FM OSCILLATING COIL FERRITE CORE SMALL FIXED INDUCTOR(10UH,K)		
-			R92-0338-05	CLYND CHIP R 0 0HM		

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-			R92-0350-05	JUMPER WIRE (RESISTOR TYPE)		
R1 ,2		*	RD41FB2B331J	CYLND CHIP R 330 J 1/8W	MK E	
R3		*	RD41FB2B821J	CYLND CHIP R 820 J 1/8W		
R4		*	RD41FB2B131J	CYLND CHIP R 130 J 1/8W		
R4		*	RD41FB2B221J	CYLND CHIP R 220 J 1/8W		
R5			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R6 ,7		*	RD41FB2B132J	CYLND CHIP R 1.3K J 1/8W		
R8 ,9			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R10			RD41FB2B561J	CYLND CHIP R 560 J 1/8W		
R11			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R12		*	RD41FB2B821J	CYLND CHIP R 820 J 1/8W	E MK E	
R13			RD41FB2B100J	CYLND CHIP R 10 J 1/8W		
R14		*	RD41FB2B131J	CYLND CHIP R 130 J 1/8W		
R14		*	RD41FB2B221J	CYLND CHIP R 220 J 1/8W		
R15			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R16 ,17		*	RD41FB2B132J	CYLND CHIP R 1.3K J 1/8W		
R18 ,19			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R20		*	RD41FB2B221J	CYLND CHIP R 220 J 1/8W	E	
R21			RD41FB2B561J	CYLND CHIP R 560 J 1/8W		
R22		*	RD41FB2B362J	CYLND CHIP R 3.6K J 1/8W	E	
R23			RD41FB2B100J	CYLND CHIP R 10 J 1/8W	E	
R24		*	RD41FB2B331J	CYLND CHIP R 330 J 1/8W		
R25			RD41FB2B561J	CYLND CHIP R 560 J 1/8W		
R28			RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R29			RD41FB2B471J	CYLND CHIP R 470 J 1/8W		
R30			RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R31 ,32		*	RD41FB2B105J	CYLND CHIP R 1.0M J 1/8W		
R33		*	RD41FB2B101J	CYLND CHIP R 100 J 1/8W		
R34			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R35			RD41FB2B472J	CYLND CHIP R 4.7K J 1/8W		
R36 -41			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R42			RD41FB2B224J	CYLND CHIP R 220K J 1/8W		
R43			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R44		*	RD41FB2B221J	CYLND CHIP R 220 J 1/8W		
R45		*	RD41FB2B123J	CYLND CHIP R 12K J 1/8W		
R47			RD41FB2B472J	CYLND CHIP R 4.7K J 1/8W		
R48		*	RD41FB2B105J	CYLND CHIP R 1.0M J 1/8W		
R49			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R50			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R51			RD41FB2B332J	CYLND CHIP R 3.3K J 1/8W		
R52			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R54		*	RD41FB2B101J	CYLND CHIP R 100 J 1/8W		
R55		*	RD41FB2B331J	CYLND CHIP R 330 J 1/8W		
R57			RD41FB2B473J	CYLND CHIP R 47K J 1/8W		
R58			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R59 ,60		*	RD41FB2B513J	CYLND CHIP R 51K J 1/8W		
R61			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R62 ,63		*	RD41FB2B513J	CYLND CHIP R 51K J 1/8W		
R64		*	RD41FB2B113J	CYLND CHIP R 11K J 1/8W		
R65			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R66 ,67		*	RD41FB2B513J	CYLND CHIP R 51K J 1/8W		
R68 ,69			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R70 -79		*	RD41FB2B513J	CYLND CHIP R 51K J 1/8W		
R80			RD41FB2B273J	CYLND CHIP R 27K J 1/8W		
R81			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		

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R82			RD41FB2B822J	CYLND CHIP R 8.2K J 1/8W		
R83		*	RD41FB2B123J	CYLND CHIP R 12K J 1/8W		
R84			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R85		*	RD41FB2B105J	CYLND CHIP R 1.0M J 1/8W		
R86			RD41FB2B223J	CYLND CHIP R 22K J 1/8W		
R87		*	RD41FB2B393J	CYLND CHIP R 39K J 1/8W		
R88			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R89		*	RD41FB2B683J	CYLND CHIP R 68K J 1/8W		
R90 -93			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R94			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R95			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R96			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R97			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R98		*	RD41FB2B123J	CYLND CHIP R 12K J 1/8W	E	
R98			RD41FB2B333J	CYLND CHIP R 33K J 1/8W	MK	
R99			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R100			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R101			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R102		*	RD41FB2B153J	CYLND CHIP R 15K J 1/8W	MK	
R102			RD41FB2B472J	CYLND CHIP R 4.7K J 1/8W	E	
R103			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R104			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R105			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R106			RD41FB2B561J	CYLND CHIP R 560 J 1/8W		
R107			RD41FB2B223J	CYLND CHIP R 22K J 1/8W	MK	
R107			RD41FB2B822J	CYLND CHIP R 8.2K J 1/8W	E	
R108			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R109			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R110			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R111			RD41FB2B332J	CYLND CHIP R 3.3K J 1/8W	E	
R111,112			RD41FB2B103J	CYLND CHIP R 10K J 1/8W	MK	
R112			RD41FB2B103J	CYLND CHIP R 10K J 1/8W	E	
R113			RD41FB2B561J	CYLND CHIP R 560 J 1/8W		
R114,115			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R116			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R117			RD41FB2B561J	CYLND CHIP R 560 J 1/8W		
R118			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R119			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R120			RD41FB2B222J	CYLND CHIP R 2.2K J 1/8W		
R121			RD41FB2B473J	CYLND CHIP R 47K J 1/8W		
R122			RD41FB2B102J	CYLND CHIP R 1.0K J 1/8W		
R123			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R124			RD41FB2B100J	CYLND CHIP R 10 J 1/8W	E	
R125,126			RD41FB2B472J	CYLND CHIP R 4.7K J 1/8W		
R127		*	RD41FB2B101J	CYLND CHIP R 100 J 1/8W		
R128		*	RD41FB2B154J	CYLND CHIP R 150K J 1/8W		
R129		*	RD41FB2B105J	CYLND CHIP R 1.0M J 1/8W		
R130			RD41FB2B103J	CYLND CHIP R 10K J 1/8W		
R131			RD41FB2B473J	CYLND CHIP R 47K J 1/8W		
R132-135			RD41FB2B104J	CYLND CHIP R 100K J 1/8W		
R136,137		*	RD41FB2B105J	CYLND CHIP R 1.0M J 1/8W		
VR1			R12-1070-05	TRIMMING PNT. (1K) STOP LEVEL		
VR2			R12-5048-05	TRIMMING PNT. (100K) NAR DIST/L		
VR3			R12-1073-05	TRIMMING PNT. (4.7K) DET DIST		
VR4 ,5			R12-3101-05	TRIMMING PNT. (22K) MONO DIST		

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VR6			R12-1070-05	TRIMMING PQT. (1K) MONO DIST/3RD		
VR7 -9			R12-3101-05	TRIMMING PQT. (22K) ST. SUB. ST. L		
D1 -4			1SS184	DIODE		
D6			RLS-73	DIODE		
D7 ,8		*	1SS226	DIODE		
D9 ,10			KV1320-2	VARIABLE CAPACITANCE DIODE		
D11		*	RD5. 1M(B2)	ZENER DIODE		
D12			RLS-73	DIODE		
IC1 -3			BA401	IC(FM IF)		
IC4			UPC1163HA	IC(IF AMP)		
IC5			LA1231NS	IC(FM IF/DETECTION)		
IC6			NJM5532D-D	IC(OP AMP X2)		
IC7 -9			NJM4200D	IC(OP AMP X2)		
IC10-15			M5218P	IC(OP AMP X2)		
Q1		*	2SK302(Y,GR)	FET		
Q3 ,4			2SK211(Y,GR)	FET		
Q5 -7		*	2SK425(X16,X17)	FET		

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SPECIFICATIONS

- EIA -

[FM tuner section]

Tuning frequency range.....	87.5 MHz to 108 MHz	
Antenna impedance.....	75 ohms unbalanced	
	DISTANCE	DIRECT
Usable sensitivity (IHF).....	10.8 dBf (0.95 μ V)	31.2 dBf (10 μ V)
50 dB quieting sensitivity (IHF)		
Mono.....	16.2 dBf (1.8 μ V)	36.3 dBf (18 μ V)
Stereo.....	38.8 dBf (24 μ V)	58.8 dBf (240 μ V)
Total harmonic distortion	WIDE	NARROW
Mono: 100 Hz.....	0.007%	0.02%
1,000 Hz.....	0.004%	0.01%
50 Hz to 10,000 Hz.....	0.009%	0.04%
Stereo: 100 Hz.....	0.015%	0.04%
1,000 Hz.....	0.008%	0.03%
50 Hz to 10,000 Hz.....	0.04%	0.15%
Signal-to-Noise ratio (85 dBf IHF)		
Mono.....	92 dB	
Stereo.....	86 dB	
(65 dBf)		
Mono.....	92 dB	
Stereo.....	76 dB	
	WIDE	NARROW
Capture ratio.....	1.0 dB	2.5 dB
Alternate channel selectivity (IHF: \pm 400 kHz).....	70 dB	100 dB
Stereo separation		
1,000 Hz.....	70 dB	58 dB
50 Hz to 10,000 Hz.....	55 dB	45 dB
15,000 Hz.....	45 dB	40 dB
Frequency response.....	20 Hz to 15,000 Hz \pm 0.5 dB	
Image rejection ratio.....	80 dB	
IF rejection ratio.....	110 dB	
Spurious rejection ratio.....	100 dB	
AM suppression ratio.....	70 dB	
Sub carrier suppression ratio.....	70 dB	
Output level/impedance at 1,000 Hz, 100% dev.		
Fixed.....	0.6 V/2.3 k Ω	
Variable.....	1.2 V/1.0 k Ω (MAX.)	
Multipath output		
Vertical.....	0.05 V/10 k Ω	
Horizontal.....	0.6 V/10 k Ω	

[General]

Power consumption.....	25 W
Dimensions.....	W: 440 mm (17-5/16") H: 88.5 mm (3-7/16") D: 327 mm (13-1/4")
Weight (Net).....	5.3 kg (11.7 lb)

- IEC/NF -

[FM tuner section]

Tuning frequency range.....	87.5 MHz to 108 MHz	
Antenna impedance.....	75 ohms unbalanced	
Sensitivity (DIN)		
Mono: S/N 26 dB, 40 kHz dev.....	0.9 μ V	
Stereo: S/N 46 dB, 46 kHz dev.....	20 μ V	
Limiting level		
-3 dB point, 40 kHz dev.....	0.45 μ V	
Total harmonic distortion (DIN)	WIDE	NARROW
Mono: 1 kHz, 40 kHz dev.....	0.01%	0.03%
Stereo: 1 kHz, 46 kHz, dev.....	0.04%	0.1%
Signal-to-Noise ratio		
Weighted		
Mono: 40 kHz dev., 1 mV input.....	82 dB	
Stereo: 46 kHz dev., 1 mV input.....	67 dB	
Unweighted		
Mono: 40 kHz dev., 1 mV input.....	78 dB	
Stereo: 46 kHz dev., 1 mV input.....	67 dB	
	WIDE	NARROW
Capture ratio.....	2.0 dB	3.5 dB
Alternate channel selectivity \pm 300 kHz 20 dB input (DIN).....	55 dB	80 dB
Stereo separation		
1 mV input (DIN)		
250 Hz.....	60 dB	50 dB
1 kHz.....	62 dB	50 dB
6.3 kHz.....	52 dB	40 dB
12.5 kHz.....	45 dB	33 dB
Frequency response.....	20 Hz to 15 kHz \pm 0.5 dB	
Image rejection ratio.....	80 dB	
IF rejection ratio.....	110 dB	
Spurious rejection ratio.....	100 dB	
AM suppression ratio.....	70 dB	
Sub carrier suppression ratio		
19 kHz: 46 kHz dev.....	55 dB	
38 kHz: 46 kHz dev.....	70 dB	
Output level/impedance at 1,000 Hz, 100% dev.		
Fixed.....	0.6 V/2.3 k Ω	
Variable.....	1.2 V/1.0 k Ω (MAX.)	
Multipath output		
Vertical.....	0.05 V/10 k Ω	
Horizontal.....	0.6 V/10 k Ω	

[General]

Power consumption.....	25 W
Dimensions.....	W: 440 mm H: 88.5 mm D: 327 mm
Weight (Net).....	5.3 kg

Note:

We follow a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the Europe (E) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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